

AD-A172 171

CULTURAL RESOURCES SURVEY OF TWO PROPOSED FLOOD CONTROL
ALTERNATIVES ON W. (U) ARCHAEOLOGICAL RESEARCH SERVICES
MINNEAPOLIS MN C HARRISON MAY 85 DACH37-85-M-0962

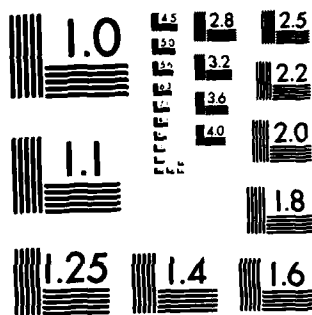
1/1

UNCLASSIFIED

F/C 3/6

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A172 171

REPORT ON CULTURAL RESOURCES SURVEY OF
TWO PROPOSED FLOOD CONTROL ALTERNATIVES
ON WILLOW RIVER AND PAPERJACK CREEK,
NEW RICHMOND, WISCONSIN. MAY 1985.

DTIC FILE COPY

DTIC
SEP 17 1986
A

This document has been approved
for public release and sale; its
distribution is unlimited.

"Original contains color
plates: All DTIC reproductions
will be in black and
white"

86 9 16 026

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE				Form Approved OMB No 0704-0188 Exp Date Jun 30, 1986	
1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKING A17217		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION Archaeological Research Servs.		6b. OFFICE SYMBOL (if applicable)	7a. NAME OF MONITORING ORGANIZATION U.S. Army Engineer District, St. Paul		
6c. ADDRESS (City, State, and ZIP Code) 2637 Humboldt Ave. S. #3 Minneapolis, MN 55408			7b. ADDRESS (City, State, and ZIP Code) 1135 USPO & Custom House St. Paul, Minnesota 55101-1479		
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (if applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DACW37-85-M-0962		
8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
					WORK UNIT ACCESSION NO
11. TITLE (Include Security Classification) REPORT OF CULTURAL RESOURCES INTENSIVE SURVEY OF TWO PROPOSED FLOOD CONTROL ALTERNATIVES ON WILLOW RIVER AND PAPERJACK CREEK, NEW RICHMOND, ST. CROIX COUNTY, WISCONSIN					
12. PERSONAL AUTHOR(S) Harrison, Christina P.A.					
13a. TYPE OF REPORT		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) May 1985	
				15. PAGE COUNT 70	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	ARCHAEOLOGY		
			FLOOD CONTROL		
			WISCONSIN		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) A cultural resources intensive survey was performed on the sites of two proposed flood control alternatives at New Richmond in St. Croix county, Wisconsin. The flood control project consisted of a diversion structure across the Willow River and channel excavation along about 8,000 feet of the valley of Paperjack Creek, a tributary to the Willow River. The field investigation involved 100 percent surface reconnaissance along and across both project areas, supplement with shovel-testing. Results were largely negative. A registered old farm, as well as another late nineteenth century farmstead are located adjacent to the creek but will not be impacted by the proposed excavation. Nothing prehistoric was found.					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL Jean M. Schmidt			22b. TELEPHONE (Include Area Code) 612-725-5921		22c. OFFICE SYMBOL IM-CL

9

REPORT ON CULTURAL RESOURCES INTENSIVE SURVEY OF TWO PROPOSED FLOOD CONTROL
ALTERNATIVES ON WILLOW RIVER AND PAPERJACK CREEK, NEW RICHMOND, ST. CROIX
COUNTY, WISCONSIN, PERFORMED DURING MAY 1985.

Prepared for: U.S. Army Corps of Engineers,
St. Paul District
1135 U.S. P.O. & Custom House
St. Paul, MN 55101

Prepared by: Christina Harrison, P.A.
Archaeological Research Services
2637 Humboldt Avenue S. #3
Minneapolis, MN 55408

DTIC
SELECTED
SEP 17 1985
W A

Submitted 6/10/85

Christina Harrison

Contract No. DACW37-85-M-0962

Awarded on 04/23/85

Original contains color
plates: All DTIC reproductions
will be in black and
white.

This document has been approved
for public release and sale in
distribution.

MANAGEMENT SUMMARY

During May, 1985, a cultural resources survey was performed on the sites of two proposed flood control alternatives at New Richmond in St. Croix County, Wisconsin. The investigation was carried out by Christina Harrison, Principal Archaeologist, Archaeological Research Services, Minneapolis, Minnesota, under contract with the Department of the Army, St. Paul District of the Corps of Engineers.

The proposed flood control alternatives would involve:

- channel excavation along approximately 8000 feet of Paperjack Creek (a tributary to the Willow River) in NESE Section 3, S $\frac{1}{2}$ SW and NWSE Section 2 as well as NENE Section 11, T30N, R18W; in connection with that also the removal of one old railroad bridge and the replacement of three other bridges across the creek;
- the construction of a 200 by 1000 feet diversion structure across the Willow River a couple of miles upstream from the center of New Richmond, in NESE Section 1, T30N, R18W.

Together, the two would mitigate the effects of periodical increases in river volume during heavy rains or rapid snowmelt. Serious flooding has in the past occurred along both the river and the creek (which at times of high water receives overflow from the river through a natural diversion channel).

The investigation was designed to meet the requirements for a Phase II Intensive Study and included:

- a thorough literature and records search;
- a 100-percent field survey with surface reconnaissance and, in all undisturbed areas with archaeological potential, also subsurface-testing.
- the assessment of the National Register eligibility of all cultural evidence recorded within the project area; also, the assessment of potential impact from the undertakings proposed by the Corps of Engineers.

The various aspects of the investigation were performed at the following times and locations:

- 4/30/85 Preliminary arrangements for the records review (4 hours).
- 5/8/85 Records review at the Corps of Engineers in St. Paul and at the Area Research Center of the University of Wisconsin at River Falls (8 hours).
- 5/11/85 New Richmond: preliminary surface reconnaissance as well as interviews with local residents in order to collect background information and gain access to privately owned parcels (8 hours).
- 5/17,18 & 24/85 Complete surface reconnaissance and supplementary subsurface testing (24 hours).

5/28/85 Preparation of a draft report (10 hours).

The records review and literature search indicated that nothing has been formally recorded regarding the prehistory of the survey area and its vicinity. There are, however, some early informant reports of prehistoric evidence being found in gardens and plowed fields along the Willow River and on the shores of Lake Hatfield just north of New Richmond. A recently completed intensive survey of historic standing structures within the city registered one historic farm along the investigated segment of Paperjack Creek, as well as a number of historic buildings along the Willow River, none of them, however, near the proposed diversion structure.

The field investigation involved 100-percent surface reconnaissance along and across both project areas, supplemented with shovel-testing at 15 m intervals and/or surface inspection of deep disturbances that afforded equivalent subsurface exposure. Tests measured 40-45 cm in diameter and were taken down to sterile mineral soil; their content was screened through $\frac{1}{4}$ inch hardware cloth. Observations were recorded on standard field record forms as well as on an ortho/contour map of the project area. Black and white photographs were used to record the varying topography all along the creek.

Results were largely negative. Nothing prehistoric was found -- or had previously been found by any of the local residents interviewed, many of them keen gardeners and very well aware of the appearance of prehistoric evidence. An old limestone foundation on the northern side of the creek lies within the project area but does not seem to possess enough structural integrity or distinctive architectural qualities to meet National Register criteria. The registered old farm, as well as another late nineteenth century farmstead, are located adjacent to the creek but would not be impacted by the proposed excavation. The site of the proposed diversion structure lacks cultural potential as it features nothing other than very steep slope or low, wet, much meandered floodplain.

Judging by the negative results of the survey, the proposed undertakings would not impact any cultural resources of National Register eligibility,

As neither of the project areas yielded any archaeological evidence, there were only two items that were in need of curation -- the field notes and the negatives for the black and white photographs. Both were submitted to the Corps of Engineers along with the report.

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	i
MANAGEMENT SUMMARY	ii
TABLE OF CONTENTS	iv
LIST OF FIGURES	v
LIST OF PLATES	v
I. INTRODUCTION	1
II. DESCRIPTION OF SURVEY AREAS AND PROPOSED UNDERTAKINGS	7
III. ARCHAEOLOGICAL AND HISTORIC INVESTIGATIONS PREVIOUSLY PERFORMED AND CULTURAL RESOURCES PREVIOUSLY RECORDED WITHIN AND NEAR SURVEY AREA	9
IV. FIELD INVESTIGATION -- METHODOLOGY AND RESULTS	11
Survey Procedure	11
Survey Results	11
V. CONCLUSION	24
VI. REFERENCES	25
Appendix A: Scope of Work	
Appendix B: Soil Profile/Test Content Forms	
Appendix C: Resume	

LIST OF FIGURES

	<u>Page</u>
Figure 1. General Location Map	3
Figure 2. Topographic Map of Survey Area	4
Figure 3. General Soil Map of St. Croix County	5
Figure 4. Topographic/Aerial View of Proposed Diversion Structure	Inside back cover
Figure 5. Topographic/Aerial View of Proposed Channel Excavation Zone Along Paper-jack Creek	Inside back cover

LIST OF PLATES

	<u>Page</u>
Plate 1. Creek valley, looking E/SE from old Chicago-Northwestern rail road grade.	13
Plate 2. Creek valley, looking E/SE from Highway 65.	13
Plate 3. Paperjack Creek, looking E across Subarea 9.	14
Plate 4. Old foundation on N side of creek in Subarea 11, as seen from the SW.	14
Plate 5. Old foundation in Subarea 11, as seen from the SW.	15
Plate 6. Same foundation, as seen from the NW.	15
Plate 7. Westward view across the W $\frac{1}{2}$ of Subarea 12.	16
Plate 8. Westward view across the E $\frac{1}{2}$ of Subarea 12.	16
Plate 9. View SW across valley from ridge NE of Subarea 13.	19
Plate 10. View S/SE across Subareas 14 and 18 from the same location as that used for Plate 9.	19
Plate 11. Subarea 15 as seen from the S/SW.	20
Plate 12. View SE across Subarea 17.	20
Plate 13. View N/NE along the bank of Subarea 18.	21
Plate 14. View SE along the bank of Subarea 18.	21
Plate 15. View E across the W part of Subarea 19.	22
Plate 16. View E along the bank of Subarea 21.	22

I. INTRODUCTION

During the month of May, 1985, a cultural resource reconnaissance survey was performed on the sites of two flood control alternatives at New Richmond, St. Croix County, Wisconsin. The work was carried out by Christina Harrison, Principal Archaeologist, Archaeological Research Services, Minneapolis, Minnesota, under contract with the U.S. Army Corps of Engineers, St. Paul District.

Past flooding along the Willow River and Paperjack Creek valleys at New Richmond have indicated the need for some kind of flood control. The following excerpts from Item 2 in the Scope of Work for this project give a brief description of the survey areas and the nature of the problem that needs to be mitigated (a complete version of the Scope can be found in Appendix A):

"The Willow River originates in Polk County near Clear Lake. It flows southwesterly across St. Croix County and discharges into the St. Croix River at Hudson, Wisconsin. The drainage area above New Richmond is 174 square miles. Within the study area, the Willow River falls 39.6 feet, or 5.6 feet per mile."

"Paperjack Creek originates southeast of New Richmond and has a drainage area of 8.4 square miles above the confluence with Willow River. Within the study area, the slope is 9.6 feet per mile. During heavy rainstorms or large discharges from a combination of rainfall and snowmelt, Paperjack Creek serves as a partial relief to New Richmond as water is diverted into the creek from a natural diversion on the Willow River east of the city. This natural diversion helps reduce the damage caused by flooding on the Willow River."

"Damaging floods on the Willow River and Paperjack Creek at New Richmond, Wisconsin, were reported as early as 1876. Major floods occurred in 1876, 1893, 1934, 1965, and 1967. The main cause of flooding is snowmelt and heavy rains. New Richmond experiences flash floods that afford little warning for emergency preparation. Ice jams also contribute to flood situations. Ice collects behind bridges, dams, and other obstructions in the river and causes flood waters to rise, as was the case during the 1965 flood. Another factor influencing the flood problem at New Richmond is (the) natural diversion --. At the 100-year flood level, Paperjack Creek carries about a third of the total flow of the Willow River. This situation equalizes the flows down the two rivers but increases damages to homes along Paperjack Creek."

Of the various flood control alternatives that have been considered, two are currently viewed as the most viable options:

- a diversion structure across the Willow River a couple of miles up-

stream from the center of the city, in NESE Section 1, T30N, R18W;

- channel excavation along approximately 8000 feet of Paperjack Creek in the south part of the city (in Sections 2,3 and 11, T30N, R18W), as well as the removal of an abandoned railroad bridge and the replacement of three other bridges across the creek.

The locations of these areas have been indicated on Figures 2,4 and 5 and are described in more detail below in Section II.

As specified in Items 3 and 4 in the Scope, this investigation was to meet the requirements for a Phase II Intensive Study, i.e. it should involve:

- a literature and records search and review thorough enough to allow the summarization of existing information about the cultural record of the survey area and, if need be, the updating of previous reports and records with data gained through the present study;
- a 100-percent field survey of all project areas not previously investigated -- a field survey which should utilize complete surface reconnaissance supplemented by subsurface testing, both of sufficient intensity to a) determine the total number and extent of all cultural resources in the project area (standing historic structures as well as archaeological sites), and b) relocate, evaluate and provide updates on all previously recorded sites in the project area;
- the assessment of the National Register eligibility of all cultural resources within the project areas (previously recorded as well as newly identified ones); also assessment of potential impact from the undertakings proposed by the Corps of Engineers.

Below, Sections III and IV provide more detail about the approach that was used both during the records search and the field investigation.

All aspects of the investigation were performed by the author at the following times and locations:

- 4/30/85 Preliminary arrangements for the records review (4 hours).
- 5/8/85 Gathering of background information, records review at the Corps of Engineers (Corps) in St. Paul, and at the Area Research Center of the University of Wisconsin at River Falls (8 hours).
- 5/11/85 New Richmond: preliminary surface reconnaissance as well as interviews with local residents in order to explain the purpose of the investigation, secure access and check for information regarding past finds of cultural evidence along Paperjack Creek (8 hours).
- 5/17&18 Complete surface reconnaissance and supplementary subsurface

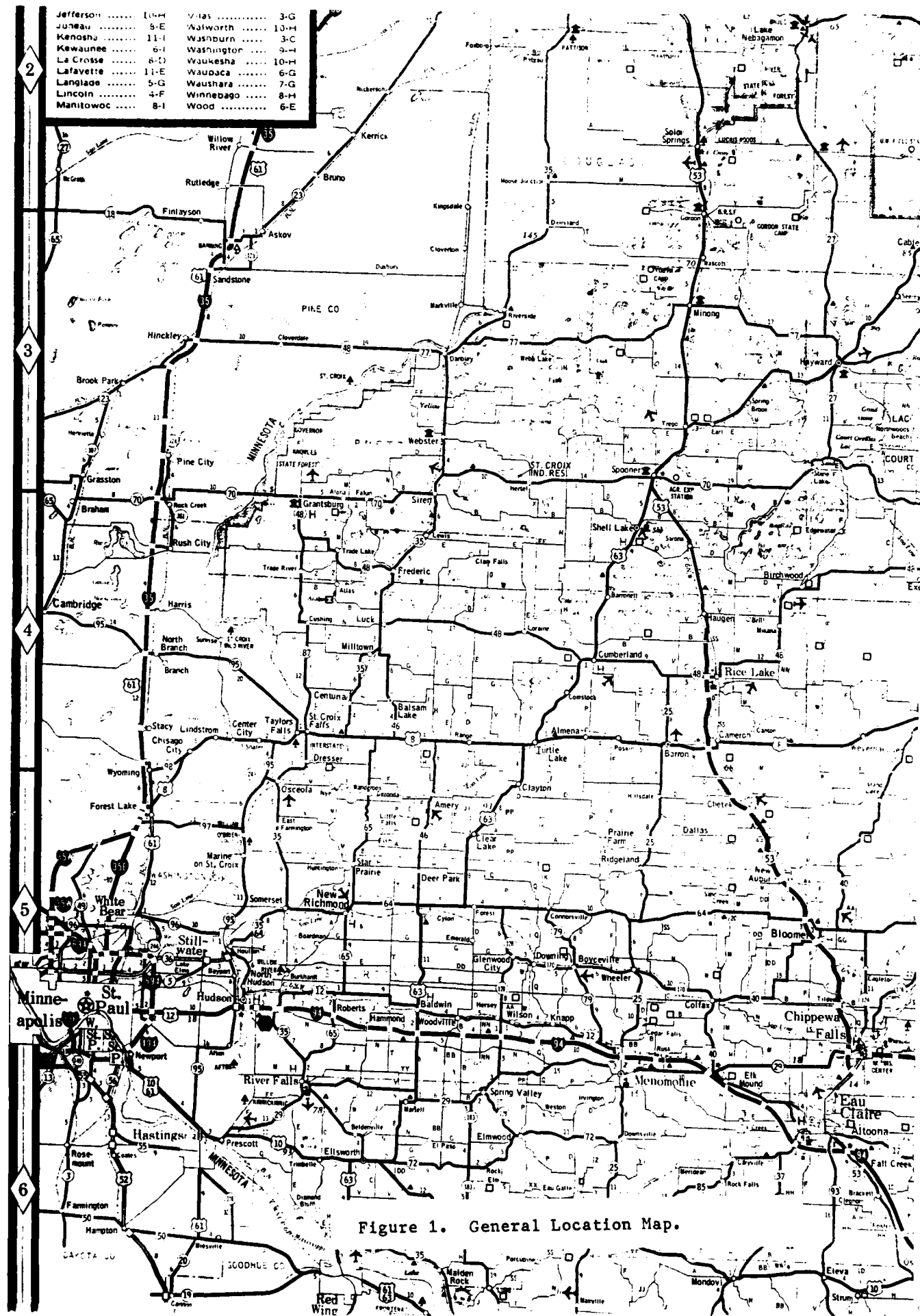


Figure 1. General Location Map.

N

RY RVEY

NEW RICHMOND SOUTH QUADRANGLE

WISCONSIN-ST. CROIX CO.

7.5 MINUTE SERIES (TOPOGRAPHIC)

SE 4 NEW RICHMOND 15 QUADRANGLE

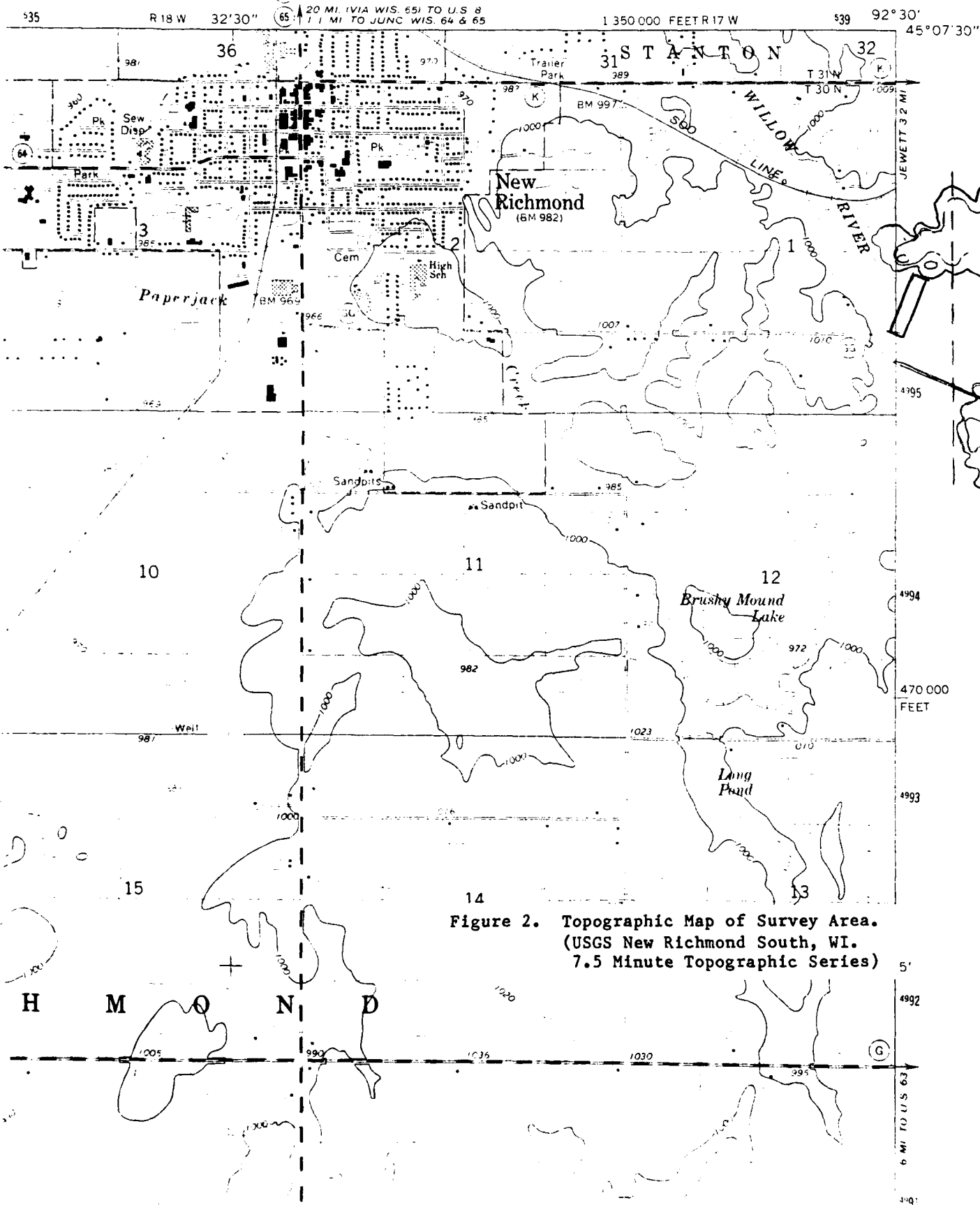


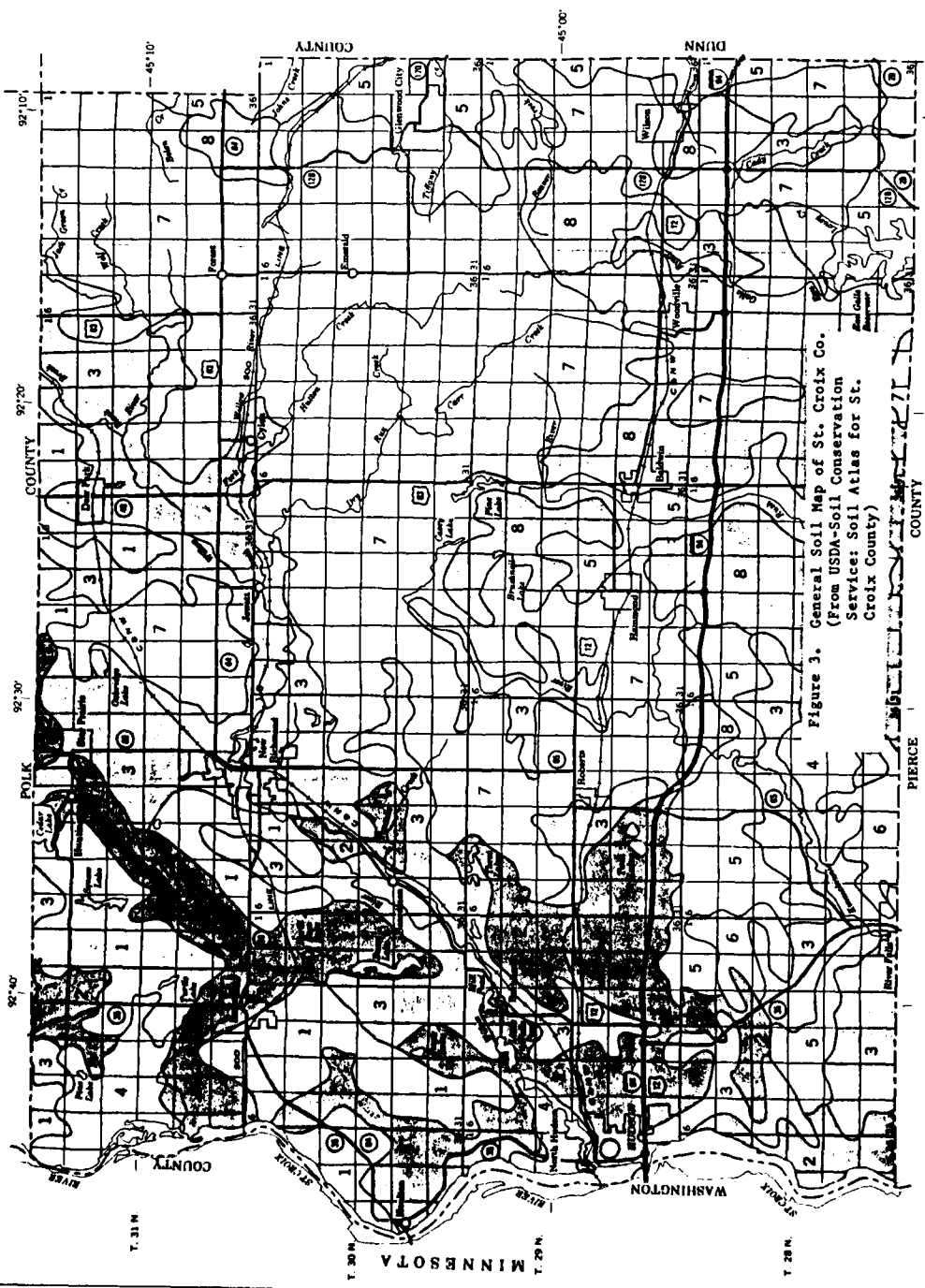
Figure 2. Topographic Map of Survey Area.
(USGS New Richmond South, WI.
7.5 Minute Topographic Series)

N

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
RESEARCH DIVISION OF THE COLLEGE OF
AGRICULTURAL AND LIFE SCIENCES,
UNIVERSITY OF WISCONSIN

GENERAL SOIL MAP ST CROIX COUNTY, WISCONSIN

Scale 1:150,000
1 0 2 3 4 5
1 2 3 4 5



SOIL ASSOCIATIONS

- SOILS WITH MODERATE TO VERY RAPID PERMEABILITY**
- 1. **Amery-Comwell association:** Well drained and somewhat excessively drained, coarse textured soils on glacial drift plains and terraces.
 - 2. **Burlington-Chesnut-Satwa association:** Well drained and somewhat excessively drained, nearly level to steep, medium textured and moderately coarse textured soils on outwash plains and stream terraces.
 - 3. **Satwa-Pilot-Antigo association:** Well drained, nearly level to sloping, medium textured soils on outwash plains and stream terraces.
 - 4. **Plainfield-Boone association:** Excessively drained, gently sloping to moderately steep, coarse textured soils on outwash and stream terraces, and somewhat excessively drained by sandstone at a relatively shallow depth, on uplands.
- SOILS WITH MODERATE TO SLOW PERMEABILITY**
- 5. **Santiago-Otterholt-Artland association:** Well drained, gently sloping to steep, medium textured soils on till plains, and soils underlain by sandstone at a relatively shallow depth or that have a thick mantle of windblown silt loam.
 - 6. **Ritchey-Derrida-Whelan association:** Well drained and moderately sloping to steep, medium textured soils on a relatively shallow depth, on uplands.
 - 7. **Santiago-Jewett-Magnor association:** Well drained and somewhat poorly drained, nearly level to sloping, medium textured soils on till plains.
 - 8. **Viasaty-Skyberg association:** Moderately well drained and somewhat poorly drained, nearly level to sloping, medium textured soils on till plains.

Compiled 1977

SECTIONALIZED TOWNSHIP	
6	5
7	8
8	9
9	10
10	11
11	12
12	13
13	14
14	15
15	16
16	17
17	18
18	19
19	20
20	21
21	22
22	23
23	24
24	25
25	26
26	27
27	28
28	29
29	30
30	31
31	32
32	33
33	34
34	35
35	36

Each map outlined on this map consists of one or more sheets. The sheets are numbered in the upper left corner of the map. The sheets are numbered in the upper left corner of the map. The sheets are numbered in the upper left corner of the map.

testing across all of the project areas except a few where it had not yet been possible to contact the landowners (16 hours).

5/24/85 Completion of all surface reconnaissance and testing (8 hours).

5/28/85 Preparation of draft report (10 hours).

Neither of the two survey areas yielded any archaeological evidence. The only items that were in need of curation -- the field notes and the negatives of all the black and white photographs taken of the survey area -- were submitted to the Corps along with the report.

II. DESCRIPTION OF SURVEY AREAS AND PROPOSED UNDERTAKINGS

From its source in Polk County, the Willow River flows southwest across St. Croix County through what is now an oversized valley, apparently once carved by a larger and more forceful glacial stream (see copy of the general soil map for the county in Figure 3). Within this large glacial valley lies a network of old channels formed and abandoned by various fore-runners to the present river, all of them clearly visible on aerial photographs such as those enclosed as Figures 4 and 5 (in pockets at the back of this report). Paperjack Creek, a tributary to the Willow River, follows a much shorter but quite parallel course about 1 to 1½ mile south of the Willow and through what appears to be a sequence of such older channels, all of them, again, considerably larger than the present creek. Several low and swampy stretches between the river and the creek also appear to be part of the network of old channels (Figure 4); one of them forms the natural diversion that now, at high water, will drain part of the Willow River into Paperjack Creek.

Between the present and the old stream channels lie remnants of old stream terraces and outwash plains or, in a few areas, ridges of limestone bedrock thinly capped by silty loams over sand and gravel.

The proposed 200 feet by 1000 feet (60 m by 300 m) large diversion structure across the Willow River would span the valley between two distinct upland areas, both at this point cresting approximately 38 feet (13 m) above river level and both separated from the latter by very steep slopes (Figure 4). The river bottoms within and northwest as well as southeast of the proposed project area feature a number of low islands and old oxbows, all indicative of quite extensive meandering and shifting of the river channel in the past.

The segment of Paperjack Creek that would be subjected to channel excavation extends for some 8000 feet (2400 m) upstream from an abandoned Chicago-Northwestern railroad grade east/southeast through NESE Section 3, S½SW and NWSE Section 2 as well as NENE Section 11 as far as to Paperjack Drive (Figures 2 and 5). The south/southwest side of this valley segment

is bounded by level to gently rolling uplands which rise quite steeply from the creek. On the opposite side, the uplands tend to be lower and separated from the creek by more gradual slope or quite extensive lower terraces -- the only exception to this would be a short stretch in south central Section 2 where the creek hugs the base of a distinctive ridge of thinly soil capped limestone. The width of the creek channel varies from just a few meters of apparently artificially deepened, ditch-like channel through the area of most intensive residential development to a span of up to 100 feet (30-35 m) across half a dozen more shallow and pond-like segments. The proposed excavation would create a channel of approximately 150 feet (45 m) bottom width and one-in-three side slopes.

Within the old drainage way that now encompasses the Willow River and the lower reaches of its tributaries, most of the soils belong to the Sattre-Pillot-Antigo association: nearly level to gently sloping to quite steep, well drained silt loams or loams formed on stream terraces and outwash plains in silt and loam sediments underlain by sand and gravel. Sattre soils developed under a native vegetation consisting mainly of oak savanna, Pillot soils mainly under prairie grasses and Antigo soils under a cover of mixed conifers and hardwoods, predominantly white pine, sugar maple and red oak. Within this major soil association, there are pockets of other soils such as the Arland, Ritchey and Rockton silt or sand loams, all developed on sandstone and limestone uplands, all of which occur sporadically along Paperjack Creek (USDA-Soil Conservation Service 1978:8 ff. and Sheet 28).

Judging by the soil types described above, as well as maps and verbal descriptions in Curtis' discussion of the native vegetation of Wisconsin (Curtis 1959), the uplands of the New Richmond area all supported open prairie vegetation as well as oak savanna. This vegetation zone was flanked by oak and pine savanna to the west, towards the St. Croix River, and by mesic southern hardwood forest to the east (predominantly sugar maple, basswood, beech, slippery elm, red oak and iron wood). Within the more protected stream valleys, the river bottoms supported dense hardwood forests of ash, elm, cottonwood, box elder and basswood. Stretches of lower ground within the grass prairie and oak savanna appear to have supported areas of open wet prairie.

Such variation in topography and native vegetation would have provided prehistoric and early historic inhabitants with a number of habitats and a considerable range of natural resources, all within quite close range of the Willow River. The river itself would have provided a direct link with the rest of the St. Croix-Upper Mississippi River drainage. These circumstances would seem to indicate very considerable cultural potential for the survey area and its vicinity.

III. ARCHAEOLOGICAL AND HISTORIC INVESTIGATIONS PREVIOUSLY PERFORMED AND CULTURAL RESOURCES PREVIOUSLY RECORDED WITHIN AND NEAR THE SURVEY AREA

The following sources were consulted and reviewed during the literature and records search:

- the site files and miscellaneous files maintained at the Wisconsin State Historical Society;
- the St. Croix County files at the Area Research Center of the University of Wisconsin at River Falls;
- the St. Croix County Historical Society;
- various issues of the Wisconsin Archaeologist;
- the Charles E. Brown Archaeological Papers and Atlas for St. Croix County;
- the Bibliography of Archaeological Reports (with updates through 1984), as compiled by the Historic Preservation Division of the State Historical Society of Wisconsin;
- the results of an intensive survey of standing historic structures in New Richmond, as compiled by the New Richmond Preservation Society, Inc.

The only archaeological survey known to have been performed near the project area was conducted in 1981 by Guy E. Gibbon, University of Minnesota, Minneapolis, on the site of a proposed wastewater treatment plant in New Richmond (in SE Section 4, T30N, R18W, circa one mile west of the surveyed section of Paperjack Creek). The results were negative (Gibbon 1981).

All available information about archaeological evidence in this area stems from informant reports, most of them recorded in the Charles E. Brown Papers.

A more systematic survey has been conducted in the case of the standing historic structures of the area.

Below is a summary of the rather scanty archaeological information that exists so far for the New Richmond area:

- a notched, 19 cm long and 5 cm wide "spear point" of grayish quartzite was reported to have been found in either S½NE¼ Section 8 or W½NW¼ Section 9, T30N, R18W, i.e. on uplands to the west of the Willow River opposite its confluence with Paperjack Creek (reported in the

Charles E. Brown Papers as well as in the Wisconsin Archaeologist, Vol. 13:1, p. 17 ff. - Old Series);

- a prehistoric site was reported as located on a peninsula off the north shore of Hatfield Lake, in E $\frac{1}{2}$ SW $\frac{1}{4}$ Section 25, T31N, R18W, just north of New Richmond; reported finds include projectile points and scrapers, numerous chert flakes, ceramics, fire-cracked rock -- all scattered across a cultivated field (Charles E. Brown Papers);
- another prehistoric site was reported as located on a hill in a marsh on the southeastern side of "former Lake Hatfield" (now partially drained) at New Richmond -- in the northeastern corner of Section 36, T31N, R18W; finds included projectile points, debitage, fire-cracked rock and a grooved stone axe (Charles E. Brown Papers);
- prehistoric as well as early historic (French) evidence was reportedly found on a hill southeast of a small, unnamed lake in NW Section 29, T31N, R17W, i.e. only two miles north of the proposed diversion structure (Charles E. Brown Papers);
- a note in the Charles E. Brown Papers on St. Croix County also refers to reports of "flint implements -- occasionally recovered in the gardens and fields along the banks of the Willow River, at New Richmond".

None of these sites or findspots have been sufficiently field verified to be given official site numbers.

Interviews with most of the residents along the investigated part of Paperjack Creek and Willow River proved negative.

Scanty as the existing information is, it does suggest a considerable time range (from the Archaic through the later prehistoric periods and the early historic contact period) for past habitation in the area.

Of the historic sites recorded during the intensive survey of standing structures in New Richmond, most are located within the central part of the city and/or along the Willow River (not, however, near the proposed diversion structure). Only one is located along the surveyed segment of Paperjack Creek: the Bell-Tierney farm, on the south side of the creek in NWSW Section 2, T30N, R18W. The main residence, a large frame structure built in 1884, is presently being renovated by the New Richmond Preservation Society, Inc. Some of the outbuildings are also still standing, of the rest, only the foundations remain. None of these remains are close enough to the creek to be impacted by the proposed undertaking.

IV. FIELD INVESTIGATION -- METHODS AND RESULTS

Survey Procedures

The field survey began with a preliminary walkover which allowed the investigator to determine:

- what areas featured any surface evidence of past cultural activities;
- what areas were level and well drained enough to have archaeological potential (much of the terrain within both project areas is either too steep or too low and wet to have had any prehistoric or early historic habitation/use potential);
- whether the areas with apparent archaeological potential would require subsurface testing or already featured enough disturbances to provide equivalent exposure.

During this preliminary walkover, an effort was made to contact and interview all the residents along the two project areas, partly in order to secure access, partly to find out whether they knew of any cultural evidence that had been found in or near the survey area.

The next step involved complete surface reconnaissance of both project areas, supplemented by shovel-testing at 15 meter intervals and/or inspection of existing disturbances at similar or lesser intervals -- see further below under the description of the survey results. Tests measured approximately 40-45 cm in diameter and were taken down well into sterile mineral soil. The content of each was screened through $\frac{1}{4}$ inch hardware cloth, or, in the case of very clayey soil, carefully gone through with a trowel and then crumbled and sifted by hand. Soil profiles were noted after which the holes were backfilled immediately. Observations regarding the topography and the probable reasons for the lack of cultural evidence were noted all along, as were the justifications for the way in which the subarea in question was inspected or judged not to warrant any inspection beyond the initial surface reconnaissance.

In order to facilitate the recording procedures and simplify the cross-references between the verbal descriptions, the maps and the photographs, the Paperjack Creek segment was divided into 22 subareas, all numbered in sequence as they were investigated and then plotted under this number on large ortho/contour maps (Figures 4 and 5). Black and white photographs were taken at frequent intervals in order to document and illustrate the the character of the different subareas.

Survey Results

For the size and location of each subarea, please refer to Figure 5. Below,

In the following description of the terrain, survey conditions and survey results, each subarea is referred to by its number in the 1-22 sequence.

- 1) First 150 meter stretch west of Highway 65 features either continuous slope from a higher terrace outside the survey area all the way down to the creek or some slope and then a lower terrace next to the creek no more than 3-4 feet above creek level. Being that low, this terrace seemed to have only marginal cultural potential but it was investigated. A dense scatter of massive gopher mounds at 2-3 meter intervals, with subsoil and topsoil mixed in mound fill, seemed to provide ample sub-surface exposure -- no testing. Results were negative.
- 2) Nothing but very steep slope down to wet creek plain -- no cultural potential.
- 3) Lobe of higher ground, fairly level on top, then sloping to a lower, fairly level terrace. Channel excavation would only affect lower part of slope and the lower terrace, but upper bank was still checked as far as 15-20 meters outside the impact boundary. A dense scatter of gopher mounds at 2-3 meter intervals, with lighter subsoil in mound fill, were trowelled through, as was the disturbed back fill produced by the burying of electric cables on the upper terrace. All results were negative.
- 4) Too low and swampy to have any cultural potential (Plate 1).
- 5) A very level terrace, apparently created by filling and landscaping, as indicated by soil borings at 15 meter intervals and interviews with staff at Doboy Industries which own and developed the property. No archaeological potential.
- 6) Lobe of higher ground which extends from the Doboy property W/SW into the project area. All in tall grasses and weeds. Preliminary testing in two locations 15 meters apart indicated that the entire area had been very disturbed by filling. According to a Mr. Eppley, former owner, this used to be low ground. No archaeological potential.
- 7) In W part all slope from higher terrace outside project area down to low and wet creek plain. The E part is somewhat higher but still rather damp and low in potential. Disturbances created by deep digging for cables were inspected with negative results. No further testing seemed warranted.
- 8) All lower terrace below a gradual slope which lies to the north of the project area. The W part features only low and wet ground barely higher than the creek level -- no archaeological potential. The central part, somewhat higher, was tested, beginning at a point 130 meters E of the W boundary of Section 2, continuing E at 15 meter intervals (see test profiles in Appendix B). All tests were located less than 10 m from the bank of the creek. Test locations 8:3 and 4 were not excavated once a



Plate 1. Creek valley, looking E/SE from old Chicago-Northwestern rail-
road grade (10:21).*



Plate 2. Creek valley, looking E/SE from Highway 65 (12:8).

* Numerals within brackets represent the negative numbers.



Plate 3. Paperjack Creek, looking E across Subarea 9 (12:7).



Plate 4. Old foundation on N side of creek in Subarea 11, as seen from the SW (12:5).



Plate 5. Old foundation in Subarea 11, as seen from the SW (11:14).



Plate 6. Same foundation, as seen from the NW (11:15).



Plate 7. Westward view across the W $\frac{1}{2}$ of Subarea 12 (12:11).



Plate 8. Westward view across the E $\frac{1}{2}$ of Subarea 12 (11:16).

dense scatter of gopher mounds (mostly circa 1 m in diameter, with lighter subsoil in fill) had provided ample subsurface exposure. All results proved negative. From the 205 meter point onwards, the terrace became lower again and was considered too wet to have any cultural potential. Gopher mounds inland, across the lower slope just outside the impact zone, were also checked, with negative results. A similar scatter on the inner part of the central area eliminated the need for testing further inland. (Plate 2).

- 9) Almost all a gradual slope down from a distinct ridge outside the project area, leveling off as a low terrace near the creek and less than 2 feet above it. The terrace seemed rather damp at the time and would have been even more so during a period of more intensive precipitation aggravated by runoff from the ridge. No archaeological potential.
- 10) Almost continuous lower slope of same upland area as that in 9), now continuing with barely any leveling off all the way to the creek. Inspection of fill around a row of planted trees proved negative. There seemed to be no need for further testing.
- 11) Circa 15 meters E of the street and halfway up the slope that is contained within the project area lies an old, partly collapsed limestone foundation which measures 9 meters north-south and 8 meters east-west. Mature, now dead hardwood trees have grown up inside it since the collapse of the upper part of the structure (Plates 4,5 and 6). The rest of this subarea features nothing but quite steep slope -- no archaeological potential.
- 12) Encompasses a series of generally very sandy and gravelly terraces which extend, gradually increasing in elevation, for some 700 feet (200 m) eastwards between the creek on the south and, on the north, a very steep slope up to a high ridge outside the project area. A series of shovel-tests was put in along the central east-west line of these terraces, beginning 50 m east of the street and continuing -- basically at 15 meter intervals but with modifications for topographic reasons -- see test profile forms in Appendix B. All tests proved negative, indicating nothing but rather disturbed creek deposited sand and gravel over very fragmented limestone (Plates 7 and 8).
- 13) All very steep slope below a level-crested bluff (outside project area). Excellent view of valley from bluff (Plate 9).
- 14) Low terrace along creek, all cultivated as a garden. According to the senior owner, Mrs. Calvin J. Powers, who has lived on the property for some 30 years and has tilled and weeded the garden for at least five years (a former pasture), there have never been any finds of a pre-historic or historic nature on this terrace. Walkover transects at 15 meter intervals proved negative. Excellent visibility (95%). (Plate 10).

- 15) Northernmost 200 feet (60 m) lack cultural potential -- all gradual slope down to low area next to creek. Central part somewhat higher, with apparent possible potential along a rather low and narrow ridge which runs parallel to the creek between the base of a long, gradual slope and a stretch of low, wet ground right along the creek. Began testing approximately 300 feet (90 m) S/SE of the N edge of Section 11 and continued along the center of the low ridge described above for some 600 feet (180 m) until all the land within the project area had turned into steep slope (Plate 11).
- 16) Bounded on the west by a narrow, wooded, north-south strip along the boundary between NWNE and NENE Section 11. Numerous animal burrows and other, man-made disturbances around a tool shed near the creek were inspected with negative results. Further E lies an expanse of continuous grassy slope from the plowed upper slope and crest of a distinct upland area (outside the impact zone) and all the way down to the creek bottoms. The SE part of this subarea features nothing but steep wooded slope.
- 17) Talked to the owners, Mr. and Mrs. Russell L'Allier, who explained how the land on the SW side of the creek had been steep and rather shady slope until they built it up with fill. Considering the original gradient and the N/NE exposure, the area must have been totally lacking in prehistoric and early historic cultural potential. There seemed to be no need for testing. Both the L'Alliers seem to be very interested in the history and prehistory of the area but could not remember hearing about any finds along Paperjack Creek. (Plate 12).
- 18) Nothing but very high and steep slope within the project boundary (Plates 13 and 14). A number of large boulders, occurring in a helter-skelter fashion along the upper part of the slope, seemed to be field rocks dumped during the cultivation of the adjacent field.
- 19) All residential above a narrow strip of low ground along the creek which is owned and managed as parkland by the city. As drawn, the project boundary seems to coincide with, or, at times, intrude somewhat into the residential lots. The low strip along the creek never rises more than a few feet above the creek -- no archaeological potential. Above that, the lower part of a very gradual slope, although it faces north, still seemed to have some cultural potential. Interviews with all the residents along this stretch, most of them keen gardeners, as well as surface reconnaissance around a number of their recently tilled and planted gardens and recently planted trees and shrubs, yielded nothing but negative results. So did inspection of a number of disturbed areas where cables and sewer pipes had been buried quite recently. (Plate 15).
- 20) Very similar in character to 19) but with a wider lower terrace -- too low to have any cultural potential -- only 1-2 feet above the creek. Gardens and plantations on the gradual slope above this terrace were



Plate 9. View southwest across valley from ridge NE of Subarea 13 (11:17).



Plate 10. View south/southeast across Subareas 14 and 18 from the same location as that used for Plate 9 (11:18).



Plate 11. Subarea 15 as seen from the S/SW (11:20).



Plate 12. View SE across Subarea 17 (12:1).



Plate 13. View N/NE along the bank of Subarea 18 (11:21).



Plate 14. View SE along the bank of Subarea 18 (12:4).



Plate 15. View E across the W part of Subarea 19 (12:6).



Plate 16. View E along the bank of Subarea 21 (12:10).

inspected with negative results. None of the residents knew of any prehistoric or historic finds along the creek.

- 21) Project area includes the northernmost part of a high, level terrace which extends right out to a very steep slope straight down to the creek. The crest, now in grass, has been plowed in the past, as indicated by the soil profiles and the amount of lighter subsoil mixed in with the A-horizon. Densely scattered gopher mounds provided excellent exposure in most of the E part; surface reconnaissance across all of them and along the edges of a plowed field which comes close to the creek in that area -- all with negative results. Testing at 15 meter intervals along the outer, northern part of the terrace proved negative. Inland from these tests, a dense scatter of gopher mounds eliminated the need for more. (Plate 16).
- 22) AmericInn Motel, located on what was formerly a part of the Tierney property, a high, by now apparently drastically landscaped terrace. Near the motel building, surface inspection noted disturbances like flattened backfill piles and areas excavated for drains and cables. Closer to the edge of the terrace, the extent of recent landscaping was indicated by such features as islands of original top soil around stumps of old trees, pushed over stumps and exposed roots along the upper slope to the creek, an unnatural demarkation along the outer edge of the terrace etc. Complete surface reconnaissance across and inspection of such disturbances proved negative.

The site of the proposed diversion structure across the Willow River was covered by surface reconnaissance at 30 meter intervals. Access to the river bottoms was gained by walking in across a snowmobile bridge/trail somewhat further downstream. The NE part of this lower segment encompasses the remains of a couple of old oxbows or meanders, now isolated stretches of swamp and stagnant water. The SW part is somewhat higher but features a very irregular relief created by a maze of low ridges that were formed during past meandering and since have been modified quite frequently by flood waters. Infested with mosquitoes and covered with dense river bottom forest and a ground cover of dense brush and tall nettles, the entire area seemed totally lacking in cultural potential. Exposures along the eroded banks of the main river and various side channels all proved completely negative. Soil corings on the higher ridges suggested that all of them were fairly recent alluvial deposits. The upland areas that would be linked by the diversion structure rise quite abruptly some 38 feet above the floodplain. Those parts that would be affected by the undertaking are both very steep and totally lacking in cultural potential. Even the areas above the direct impact zone feature quite a distinct gradient. Surface reconnaissance across both, with inspection of animal burrows and, on the SW side, disturbances around some planted trees, proved completely negative. The residents near the SW end of the project area have extensive gardens but could not recall finding anything prehistoric or historic on their properties.

V. CONCLUSION

There is no indication that any prehistoric or early historic evidence exists either within or directly adjacent to the two project areas. There are some later historic sites along the investigated part of Paperjack Creek: the Epley farm which apparently was settled quite early in the 1850's (predating by several years the settlement on the Willow River that was to become New Richmond), located in/adjacent to subareas #6 and 7, and the Tierney farm, located in/adjacent to subarea #22. None of these would be directly affected by the proposed channel excavation as all the buildings and main activity areas of the farmsteads were located further inland.

The foundation recorded in subarea #11 appears to be fairly old, dating back to the later part of the 19th century. It seems to be the remains of some kind of outbuilding, possibly a granary or storehouse, for a farm that presumably has been obliterated by recent and intensive residential development along the creek. A number of local residents were interviewed about it, including members of the Epley family and the New Richmond Preservation Society. No one seemed to have any information about the foundation or to consider it particularly significant within the historical context of the creek. The site does not seem to possess much structural integrity and does not appear to be very unusual in its construction. As a systematic inventory of standing historic structures already has been completed for the city, with subsequent nomination to the National Register of selected sites representative of different periods and aspects of local history, it seems doubtful that a structure like this foundation could add much significant information. Because of the above, it would not seem to meet National Register criteria.

VI. REFERENCES

Curtis, John T.

1959 The Vegetation of Wisconsin. The University of Wisconsin Press,
Madison.

Gibbon, Guy E.

1981 Archaeological Survey of Area Within Proposed Wastewater Treatment Plant, New Richmond, Wisconsin. University of Minnesota, Minneapolis.

State Historical Society of Wisconsin, Historic Preservation Division

1976 Bibliography of Archaeological Reports, with Supplements 1-8, issued through 1984.

USDA-Soil Conservation Service, with Research Division of the College of Agricultural and Life Sciences, University of Wisconsin

1978 Soil Survey of St. Croix County.

Also consulted were the following sources, at the State Historical Society of Wisconsin:

- The National Register of Historic Places, entries for Wisconsin.
- The Wisconsin Archaeological Codification File.
- The Charles E. Brown Wisconsin Archaeological Manuscripts and Atlas.

Also consulted were the following locally maintained files:

- The St. Croix County Historical Files maintained at the Area Research Center at University of Wisconsin, River Falls, and at the St. Croix County Historical Society, Hudson, WI.
- The inventory of historic sites compiled by the New Richmond Preservation Society, Inc.; copy on file at the New Richmond Library.

A number of local residents were interviewed in connection with this project. The following individuals were particularly generous with their time and with information: John DeBoer, Doboy Industries; Russell and Betty L'Ailler, residents in SWNE Section 11, T30n, R18W; Mary Sather, member of the New Richmond Preservation Society, Inc.; Lynne Wood, President of the same organization.

Appendix A: Scope of Work

**SCOPE OF WORK
CULTURAL RESOURCES INVESTIGATION OF
NEW RICHMOND, WISCONSIN**

1.00 INTRODUCTION

1.01 The contractor will undertake a cultural resources intensive survey of flood control alternatives in New Richmond, Wisconsin.

1.02 This cultural resources inventory is in partial fulfillment of the obligations of the Corps of Engineers (Corps) regarding cultural resources, as set forth in the National Historic Preservation Act of 1966 (Public Law (P.L.) 89-665), as amended; the National Environmental Policy Act of 1969 (P.L. 91-190); Executive Order (E.O.) 11593 for the "Protection and Enhancement of the Cultural Environment" (Federal Register, 13 May 1971); the Archeological and Historical Preservation Act of 1974 (P.L. 93-291); the Advisory Council on Historic Preservation "Regulations for the Protection of Historic and Cultural Properties" (36 CFR Part 800); the Department of the Interior guidelines concerning cultural resources (36 CFR Part 60); and the Corps of Engineers regulations (ER 1105-2-50).

1.03 The laws listed above establish the importance of Federal leadership, through the various responsible agencies, in locating and preserving cultural resources within project areas. Specific steps to comply with these laws, particularly as directed in P.L. 93-291 and E.O. 11593, are being taken by the Corps "... to assure that Federal plans and programs contribute to the preservation and enhancement of non-Federally owned sites, structures, and objects of historical, architectural, or archeological significance." A part of that responsibility is to locate, inventory, and nominate to the Secretary of the Interior all such sites in the project area that appear to qualify for listing on the National Register of Historic Places.

1.04 Executive Orders 11493 and the 1980 amendments to the National Historic Preservation Act further direct Federal agencies "... to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished or substantially altered." In addition, the Corps is directed to administer their policies, plans, and programs so that federally and non-federally owned sites, structures, and objects of historical, architectural, or archeological significance are preserved and maintained for the inspiration and benefit of the people.

1.05 This cultural resources investigation will serve several functions. The report will be a planning tool to aid the Corps in meeting its obligations to preserve and protect our cultural heritage. It will be a comprehensive, scholarly document that not only fulfills federally mandated legal requirements but also serves as a scientific reference for future professional studies. It will identify sites which may require additional investigations and which may have potential for public-use development. Thus, the report's content must be analytical in nature, not just descriptive.

2.00 PROBLEM IDENTIFICATION

2.01 Past flooding and the threat of future flooding along the Willow River and Paperjack Creek at New Richmond have emphasized the need for flood control, established the extent of possible flood damages, and increased local people's perception of the need for floodplain management.

2.02 The Willow River originates in Polk County near Clear Lake. It flows southwesterly across St. Croix County and discharges into the St. Croix River at Hudson, Wisconsin. The drainage area above New Richmond is 175 square miles. Within the study area, the Willow River falls 39.6 feet, or 5.6 feet per mile.

2.03 Paperjack Creek originates southeast of New Richmond and has a drainage area of 8.4 square miles above the confluence with the Willow River. Within the study area, the slope is 9.6 feet per mile. During heavy rainstorms or large discharges from a combination of rainfall and snowmelt, Paperjack Creek serves as a partial relief to New Richmond as water is diverted into the creek from a natural diversion on the Willow River east of the city. This natural diversion helps reduce the damages caused by flooding on the Willow River.

2.04 A small dam is located on the Willow River in New Richmond immediately upstream of the Chicago and Northwestern Railroad Bridge and the Domain Industries mill (formerly Doboy Industries). The water surface upstream of the dam can be controlled by manually placing or removing stop logs at the dam.

2.05 Damaging floods on the Willow River and Paperjack Creek at New Richmond, Wisconsin, were reported as early as 1876. Major floods occurred in 1876, 1893, 1934, 1965, and 1967. The main cause of flooding is snowmelt and heavy rains. New Richmond experiences flash floods that afford little warning for emergency preparation. Ice jams also contribute to flood situations. Ice collects behind bridges, dams, and other obstructions in the river and causes floodwaters to rise, as was the case during the 1965 flood. Another factor influencing the flood problem at New Richmond is a natural diversion that exists on the Willow River just east of the city. At high flood elevations, water naturally flows out of the Willow River into Paperjack Creek. At the 100-year flood level, Paperjack Creek carries about a third of the total flow of the Willow River. This situation equalizes the flows down the two rivers but increases damages to homes along Paperjack Creek.

2.06 Two major floods have occurred within the past 20 years (1965 and 1967). Data from the early flows of 1876, 1893, and 1934 are limited, but apparently the April 1965 flood had the highest peak discharge to date. A long-time city resident stated that the flood of 1934 was similar in magnitude to the flood of 1965. Ice jams, particularly at Highways 64 and 65, created obstructions to the flow in the spring floods of April 1965 and March 1967 and produced stages that were higher than those that would be found in an unobstructed channel.

3.00 DEFINITIONS

3.01 For the purpose of this study, the cultural resources investigations will include a phase II intensive survey.

3.02 Cultural Resources - are defined to include any building, site, district, structure, object data, or other material relating to the history, architecture, archeology, or cultural of an area.

3.03 Literature and Records Search - is defined as a research for and examination of written reports, books, articles, files, records, etc., published and unpublished (found in private, local, State, and Federal depositories), which are pertinent to the cultural resources investigation to be carried out for a particular project. The purposes of the literature and records search are: to familiarize the contractor with the cultural history of the study area and past investigations which have been carried out in the area; to document the location and condition of known sites within the project area, the extent of past work undertaken at the site, and any other information that may be relevant in assessing the significance of the site; and to provide this information in a summarized form to the agency requesting the search. Although existing data may be extensive, the literature and records search should be as comprehensive as possible in providing a usable body of data for the purposes outlined above (see sections 5.10-5.12).

3.04 Literature and Records Review - is defined as the review and evaluation of the pertinent literature and records defined in section 3.03. The purpose of the literature and records review is to provide the sponsoring agency with the contractor's professional opinion on the nature, extent, and quality of the sources identified in the literature and records search (see sections 5.10-5.12).

3.05 Phase I Reconnaissance Study - will include a field survey based on probability sampling of the project area and a complete or updated literature and records search and review. The percentage and type of sampling required are defined in the survey specifications sections (5.00-5.02) of this scope of work. The purpose of the reconnaissance study (based on literature, records, field and laboratory research) is to provide data sufficient to develop a predictive model of the archeological, historic, and architectural sites in the project area. The reconnaissance study will also develop a complete and detailed phase II intensive study program, including the survey needs and plan, staff, and person-days/hours necessary to complete all aspects of the program. The survey field methods will follow those outlined in sections 6.13-6.16 and 7.03k of this scope of work. The reconnaissance study will also provide data sufficient to determine the site size, density, depth, elevation, cultural affiliation, geographic relationship to the proposed project features, potential or probable scientific significance, potential or probable eligibility for the National Register, and an assessment of the direct and indirect, and varying levels of impact (e.g., changes in pool level) of all proposed project features on each of the area's cultural resource sites (archeological, historic, and architectural) and data base. (See other scope of work sections for complete study and report requirements.)

3.06 Phase II Intensive Study differs from the reconnaissance study in the percentage of the project area surveyed and in some of the tasks required during the study. This study will involve summarizing and updating previous reports, records, and literature. It will also include a 100-percent field survey of all project areas not previously surveyed. It will use data collection methods (e.g., literature and records search and review, surface collections and informal subsurface testing) sufficient to determine the site size, density, depth, elevation, cultural affiliation and geographic relationship to the proposed project features. It will assess the direct, indirect, and varying levels of impact (e.g., changes in pool level) of all proposed project features on all the area's cultural resource sites (archeological, historic, and architectural) and on data base. The intensive study will also determine each site's potential or probable scientific significance and potential or probable National Register eligibility; it will determine which sites qualify for phase III testing; and it will develop a complete and detailed phase III testing and research program, including the testing needs and plan, staff, and person-days/hours necessary to complete all aspects of the program. The survey field methods will follow those outlined in sections 6.13-6.16 and 7.03k of this scope of work. (See other scope of work sections for complete study and report requirements.)

3.07 Phase III Testing and Research will involve formal testing or research of all the cultural resource sites (archeological, historic, and architectural) that are identified in the phase II intensive study as potentially able to provide cultural/behavioral/scientific information to answer important research questions, and that are potentially or probably eligible for the National Register. The testing and research study will require intensive collection of field and/or literature archival data; evaluation and analysis of the data; completion of any other necessary associated studies; detailed description of each site; evaluation of significance; determination and preparation of forms for the National Register eligibility of all sites; assessment of the direct, indirect, and varying levels of impact of the proposed project features on all the area's cultural resource sites and data base; and development of a complete and detailed mitigative plan, including the mitigation needs and plans, plus alternative approaches with priorities identified for reducing or avoiding adverse impacts, staff, and person-days/hours necessary to complete all aspects of the program.

4.00 SURVEY SPECIFICATIONS

4.01 Literature and Records Search and Review. The contractor will conduct a search and review for New Richmond, Wisconsin, according to the specifications in sections 3.03-3.04, and 5.10-5.12 of the scope of work.

4.02 Phase II Intensive Study. The contractor will conduct a phase II intensive study for areas B and C, as shown on the enclosed aerial photograph. This study will involve a 100 percent field survey of each area. Field methods must be those described in scope of work sections 5.13-5.16 and 6.03k

and m. If field methodology varies from these requirements the contractor must describe and justify the methodology in the report.

4.03 Project Alternatives

a. Area B. This area includes a possible location for a diversion structure on the Willow River.

b. Area C. This area includes channel excavation of Paperjack Creek from upstream of the abandoned railroad bridge to upstream of Bilmar Avenue, removal of the abandoned railroad bridge, and replacement of three other bridges on Paperjack Creek.

c. The enclosed aerial map indicates the survey limits for each area (outlined in green), and brief description of the alternative, including width and length.

5.00 PERFORMANCE SPECIFICATIONS

5.01 The contractor will utilize a systematic, interdisciplinary approach in conducting the study. The contractor will provide specialized knowledge and skills during the course of the study to include expertise in archeology, history, architectural history, and other social and natural sciences as required.

5.02 The extent and character of the work to be accomplished by the contractor will be subject to the general supervision, direction, control, review, and approval of the contracting officer.

5.03 Techniques and methodologies that the contractor uses during the investigation shall be representative of the current state of knowledge for the respective disciplines.

5.04 The contractor shall keep standard records which shall include, but not be limited to, field notebooks, site survey forms, field maps, and photographs. These records will be made available to the contracting officer upon request.

5.05 The tested areas will be returned as closely as practical to presurvey conditions by the contractor.

5.06 The recommended professional treatment of recovered materials is curation and storage of the artifacts at an institution that can properly insure their preservation and that will make them available for research and public view. If such materials are not in Federal ownership, the contractor must obtain consent of the owner, in accordance with applicable law, concerning the disposition of the materials after completion of the report. The contractor will be responsible for making curatorial arrangements for any collections which are obtained. Such arrangements must be coordinated with

the appropriate officials of Minnesota and South Dakota and approved by the contracting officer.

5.07 When sites are not wholly contained within the right-of-way, the contractor shall survey an area outside the right-of-way limits large enough to include the entire site within the survey area. This procedure shall be done in an effort to delineate site boundaries and to determine the degree of which the site will be impacted.

5.08 The contractor shall provide all materials and equipment necessary to expeditiously perform all services required of the study.

5.09 Right of Entry

a. If it becomes necessary in the performance of the work and services, the contractor shall, at no cost to the government, secure the rights of ingress and egress on properties not owned or controlled by the government. The contractor shall secure the consent of the owner, his representative, or agent, in writing prior to effecting entry on such property. If requested, a letter of introduction, signed by the District Engineer, can be provided to explain the project purposes and request the cooperation of landowners. Where a landowner denies permission for survey, the contractor shall immediately notify the contracting officer and shall describe the extent of the property to be excluded from the survey.

b. Survey work to be performed under this scope of work may require entry upon land not under the jurisdiction of the U.S. Government. The contractor shall contact the SCS District Conservationist for the counties in the work area for assistance in contracting the landowners that are involved. It shall be the responsibility of the contractor to obtain right-of-entry from the owners. The contractor shall be responsible for any damage to property caused by his operations. In the event that the contractor is denied access to a property essential to the survey, he shall contact the contracting officer for a determination of an appropriate course of action. No additional payment for lost or stand-by time due to right-of-entry will be allowed. (See appendix B for a list of Soil Conservation Service District Representatives.)

5.10 Literature and Records Search and Review (see sections 4.03 and 4.04 for definitions). The contractor will obtain information and data for the literature and records search from, but will not be limited to, the following sources:

a. Published and unpublished reports and documents such as books, journals, theses, dissertations, manuscripts, newspapers, and other private, city, State, or Federal documents.

b. Site files and other information held at the Wisconsin State Historical Society Library, Archives, and Archeology Department; the State Archeologist Office; the University of Wisconsin Department of Anthropology and library; and materials available from the local county historical society.

c. The contractor will obtain from the Wisconsin State Historic Preservation Office information regarding any cultural resources in the project area that have been nominated or are being considered for nomination to the National Register of Historic Places, and will report the results in the contract report.

d. Consultation with other professionals familiar with cultural resources in the area.

e. Consultations with amateur archeologists, historians, and individuals concerned with local archeology and history in order to locate sites and to identify and define local interests and resources perceived to be locally significant.

5.11 A review and evaluation of previous archeological and historical studies of the study area and region (including who conducted the work and the date, extent, and adequacy of the past work as it reflects on the interpretation of what has been done in the area) should be undertaken and summarized in the contractors report.

5.12 The literature and records search and review shall include all the sites (historic and prehistoric) identified during the course of the study and an evaluation of the direct and indirect impact upon them of all the proposed project alternatives and features.

5.13 Phase II Intensive Study Field Methods (see also section 3.06). the on-the-ground examination will involve a 100 percent survey and subsurface informal testing of the area to determine the total number and extent of cultural resources present (see section 3.06 for other goals and requirements). These resources include standing architectural structures as well as historic and prehistoric archeological sites.

5.14 The contractor will relocate all previously recorded cultural resources known to exist in the project area, report their condition, evaluate the impact of project impacts upon them, and update the State site forms on National Register forms. All relocated sites will be investigated and reported in the same fashion as newly discovered sites.

5.15 The contractor's survey will include surface inspection in areas where surface visibility permits adequate recovery of cultural materials and subsurface testing in all areas where surface visibility is limited or obscured. Subsurface investigation will include shovel testing, coring, soil borings, cut bank profiling or some other appropriate testing method. If field methods vary from those required, they must be described and justified in the report.

5.16 The recommended survey grid or transect interval is 15 meters (50 feet) and testing interval is 15 meters (50 feet). However, this interval may vary depending upon field or site density/size conditions. If the recommended interval is not used, justification should be presented for selection of an alternate interval. All subsurface tests will be screened through 1/4-inch

mesh hardware cloth and will be recorded on appropriate testing forms. All subsurface testing forms will be included in the appendix to the contractors report. The contractor will also indicate the locations of all subsurface tests on USGS and/or project maps and key these with the testing forms in the appendix.

5.17 When a cultural resource site is relocated or discovered, the contractor will collect sufficient data (topographic, soil, cultural, etc.) to complete the appropriate study and report requirements. (See appropriate scope of work sections for details.)

6.00 GENERAL REPORT REQUIREMENTS

6.01 The contractor will submit the following types of reports, which are described in this section and in section 9.00: field notes, progress reports, draft contract report, final contract report, and a popular report.

6.02 For each reference discussed in the technical contract report, the contractor must cite the author, date, and page number.

6.03 The contractors technical report shall include, but shall not necessarily be limited to the following information:

a. Title Page: Note the type of investigation undertaken, the cultural resources assessed (archeological, historical, and architectural), the project name and location (county and State), the date of the report, the contractors name, the contract number, the name of the author(s) and/or principal investigator, the signature of the principal investigator, and the agency for which the report is being prepared.

b. Abstract: An abstract of findings, conclusions, and recommendations. this should not be an annotation.

c. Management Summary: Concisely summarize the study, which will contain all essential data for using the document in the Corps management of the project. This information will minimally include who the sponsor is and why the work was undertaken, a summary of the study (literature and records search and review, including the National Register of Historic Places, dates checked, and results; field work; lab analysis), study limitations, study results, significance, recommendations, and identification of the repository of all pertinent records and artifacts.

d. Table of Contents.

e. List of Figures.

f. List of Plates.

g. Introduction: Identify the sponsor (Corps of Engineers) and the sponsor's reason for the study; provide an overview of the sponsors' project and the alternatives, with the alternatives located on USGS quad maps and/or

Corps project maps; define the location and boundaries of the study area (with regional or State and area-specific maps); reference this scope of work (to be included in the appendix to the Contractor's report); identify the number of person-days/hours spent during the study; identify the dates when the various types of work were conducted; and identify the repository of records and artifacts.

h. Previous Archeological and Historical Studies: Provide a summary and evaluation of previous archeological and historical studies of the project area and region including the researchers, date, extent, adequacy of the past work, study results, and cultural/behavioral inferences derived from each study.

i. Theoretical and Methodological Overview: Describe or state the goals of the Corps and the study researcher, the theoretical and methodological orientation of the study, and the research strategies applied to achieve the stated goals.

j. Literature and Records Search and Review: Describe, in detail, the methodology and sources used for the literature and records search and review as well as a description and evaluation of all information and data recovered. Include bibliographic information at the end of the report. (See sections 4.03, 4.04, 5.10, 5.11, and 5.12.)

k. Field Methods: Describe specific archeological, historical, and architectural activities undertaken to achieve the stated theoretical and methodological goals. Include all field methods, techniques, strategies, and a rationale or justification for specific methods or decisions. The description of the field conditions, topographic/physiographic features, vegetation conditions, soil types, informal testing, stratigraphy results, survey limitations, survey testing results with all appropriate testing forms to be included as an appendix (e.g., shovel tests, coring, cut bank profiles, etc.), degree of surface visibility, whether or not the survey resulted in the location of any cultural resources, the methods used to survey the area (pedestrian reconnaissance, subsurface test, etc.), the justification and rationale for eliminating uninvestigated areas, and the grid or transect interval used. Testing methods shall include descriptions of test units (size, intervals, stratigraphy, depth) and the rationale behind their placement.

l. Analysis: Describe and provide the rationale for the specific analytical methods and techniques used, and describe and discuss the qualitative and quantitative manipulation of the data. Limitations or problems with the analysis based on the data collection results will also be discussed. This section shall also contain references to accession numbers used for all collections, photographs, and field notes obtained during the study, and the location where they are permanently housed. All diagnostic artifacts will be illustrated or photographed and included in the report.

m. Investigation Results: Describe the archeological, historic, and architectural resources encountered during the study, and any other data

(e.g., literature, archival, other studies) pertinent to a complete understanding of the resources within the study area. Include enough empirical data that the study results can be independently assessed. The description of the data shall minimally include: a description of the site; amounts and type of material remains recovered; relation of the site or sites to physiographic features, vegetation and soil types, project alternatives, and direct and indirect impact areas; analysis of the site/sites and data (e.g., site/s type, density, distribution, cultural historical components and information, environmental, cultural/behavioral inferences or patterns); site condition; and location and size information (elevation, complete quad map source, legal description, address if appropriate, and site size, density, depth, and extent). The information shall be presented in a manner that can be used easily and efficiently by the Corps of Engineers.

Each discovered or relocated site will be plotted on a eligible USGS map and COE project map. Each site location in relation to relevant project features will also be shown on legible USGS maps and COE project maps. If a site location has not been field-verified, the contractor must indicate the approximate area on the maps and indicate that it has not been verified.

Site boundaries with legal and UTM coordinates will be delineated for all relocated and newly discovered sites, and all official site records (e.g., State site forms, National Register forms) will be completed or updated as necessary.

Additionally, USGS and/or project maps will indicate the areas surveyed and the survey methods employed (pedestrian walkover, subsurface tests). The location of each informal subsurface test will be placed on the map and keyed with the testing forms in the appendix. The maps will also indicate those areas that were eliminated from the survey due to unacceptable survey conditions.

All maps will be labeled with a typed or drafted caption/description, a north arrow, a scale bar, township, range, map size, and dates, and the map source (e.g., the USGS quad name, project map title, or published source) and will have proper margins. Maps that are too large to be incorporated in the report may be folded and enclosed at the back of the report or submitted as a submittal. Fold-out maps within the report text are acceptable.

All sites will be recorded on the appropriate State site forms (to be included in the appendix). Inventoried sites shall include a site number. However, if temporary site numbers will be used in either the draft or final reports, they shall be substantially different from the official site designations to avoid confusion or duplication of site numbers. Known sites shall have their State site forms and other forms (e.g., National Register) updated, and included in the appendix.

n. Evaluation and Conclusions. Evaluate and formulate conclusions concerning site/sites location, density, size, condition, distribution, and significance in relation to the local and regional archeology, history, and architecture, and in relation to the direct and indirect impacts of the

project alternatives and features on them, and discuss the potential and goals for future research. Discuss the reliability of the analysis or other pertinent data recovered (e.g., site locations, types, distribution, etc.); relate results of the study and analysis to the stated study goals; identify changes, if any, in the research goals; synthesize and compare the results of the analysis and study; integrate other associated studies or data; and identify and discuss environmental and cultural/behavioral patterns and processes that are inferred from the study and analysis results.

o. Recommendations. Discuss the direct, indirect, and varying levels of impacts of all the project alternatives and features on the area's cultural resources with specific management recommendations on all previously recorded and newly discovered sites; discuss the scientific significance of all sites to the extent permitted by the study level in relation to the research goals established in the study; make recommendations on the potential or probable eligibility of all sites to the National Register of Historic Places; make recommendations with regard to the Corps planning goals and project alternatives; and develop a phase II intensive study program as defined in section 3.05 of this scope of work. If it is the contractors assessment that no significant resources exist in the project area, the methods of investigation and reasoning which support that conclusion will be made for future investigation needs. Any evidence of cultural resources or materials which have been previously disturbed or destroyed will be presented and explained.

p. References. Provide standard bibliographic references (American Antiquity format) for every publication cited in the report. References to cited specifically in the report text will be listed in a separate (Additional References" section.

q. Appendix. Include the scope of work, resumes of all personnel involved, all correspondence derived from the study, all State or National Register site forms, all testing forms, and any other pertinent report information referenced in the text as included in the appendix.

6.04 Failure to fulfill these report requirements will result in the rejection of the report by the contracting officer.

7.00 FORMAT SPECIFICATIONS

7.01 The contractor shall submit to the contracting officer the photographic negatives for all black-and-white photographs in the final report.

7.02 All text materials will be typed, single-spaced (the draft reports should be space-and-one-half or double-spaced), on good quality bond paper, 8.5 inches by 11.0 inches, with a 1.5-inch binding margin on the left, 1-inch margins on the top and right, and a 1.5-inch margin at the bottom, and will be printed on both sides of the paper.

7.03 Information will be presented in textual, tabular, and graphic forms, whichever are most appropriate, effective, or advantageous to communicate the

necessary information.

7.04 All figures and maps must be clear, legible, self-explanatory, and of sufficiently high quality to be readily reproducible by standard xerographic equipment, and will have margins as defined above.

7.05 The final report cover letter shall include a budget of the project.

7.06 The draft and final reports will be divided into easily discernible chapters, with appropriate page separation and heading.

8.00 MATERIALS PROVIDED

8.01 The contracting officer will furnish the contractor with the following materials:

a. Access to any publications, records, maps, or photographs that are on file at the St. Paul District, Corps of Engineers.

b. Two sets of USGS quadrangle maps of the project area. One set will be used as field maps, and one set will be returned with the appropriate information (see section 6.03m).

c. Two sets of project alternative maps. One set will be used for field maps, and one set will be returned with the appropriate information (see section 6.03m).

9.00 SUBMITTALS

9.01 The contractor will submit reports according to the following schedules:

a. Project Field Notes. One legible copy of all the project field notes will be submitted with the draft contract report.

b. Progress Reports. On the first of each month, the contractor will submit a brief progress report outlining the work accomplished that month and any problems or needs that require the attention of the Corps.

c. Draft Contract Report. Ten copies of the draft contract report will be submitted on or before 60 days after contract award. The draft contract report will be reviewed by the Corps of Engineers, the State Historic Preservation Officer, the State Archeologist, and the National Park Service. The draft contract report will be submitted according to the report and contract specifications outlined in this scope of work.

d. Final Contract Report. The original and 15 copies of the final contract report will be submitted 30 days after the Corps of Engineers comments on the draft contract report are received by the contractor. The final contract report will incorporate all the comments made on the draft contract report.

e. Site Forms. All newly completed and updated State site forms will be submitted to the appropriate State agency.

9.02 Neither the contractor nor his representative shall release any sketch, photograph, report, or other material of any nature obtained or prepared under the contract without specific written approval of the contracting officer prior to the acceptance of the final report by the government. After the contracting officer has accepted the final report, distribution will not be restricted by either party except that data relating to the specific location of extant sites will be deleted in distributions to the public.

10.00 METHOD OF PAYMENT

10.01 Requests for partial payment under this fixed price contract shall be made monthly by invoice. A 10-percent retained percentage will be withheld from each partial payment. Upon approval of the final contract report by the contracting officer, final payment, including previously retained percentage shall be made.

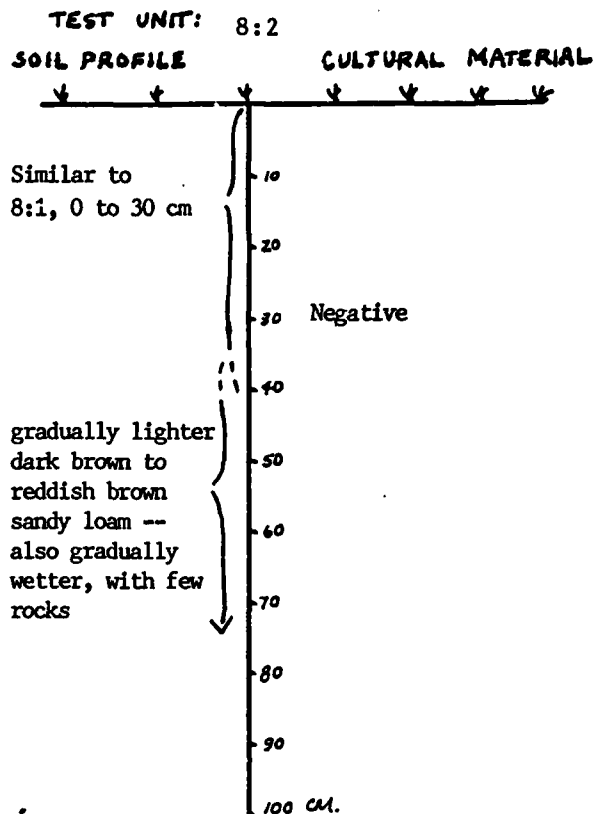
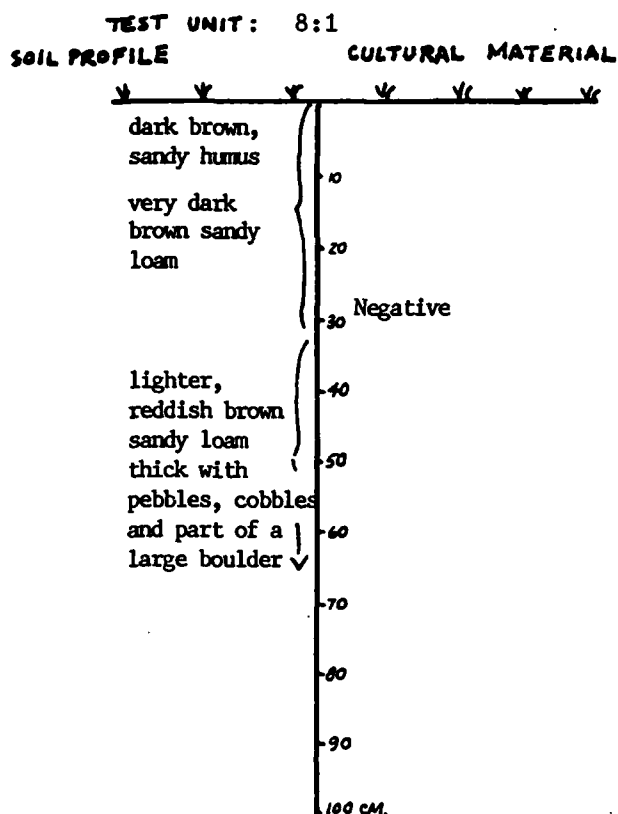
Appendix B: Soil Profile/Test Content Forms

Paperjack Creek Flodd Control Project

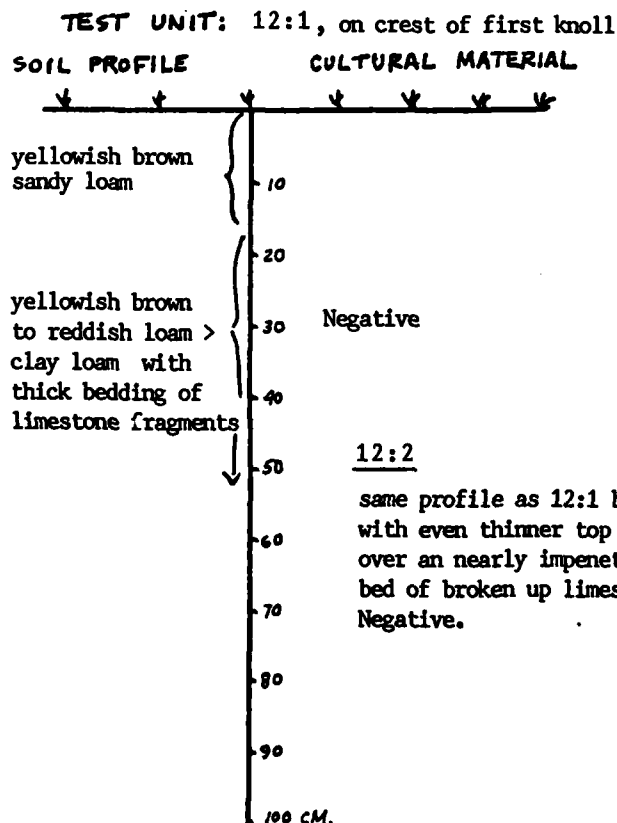
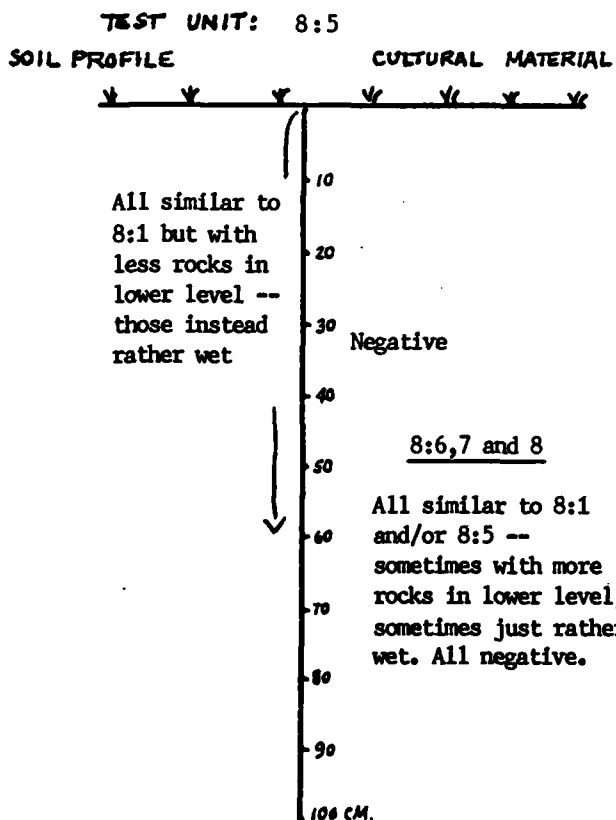
County St. Croix, WI

Crew C. Harrison

Date 5/17-18/85



50 m E of street



State site # ~~XXXXXX~~ New Richmond

Paperjack Creek Flood Control Project

County St. Croix, WI

Crew C. Harrison

Date 5/17-18/85

TEST UNIT: 12:3, on third terrace, 30m E of 12:2 and separated from it by low area
 TEST UNIT: 12:4, 15m E of 12:3, near E end of third terrace.

SOIL PROFILE

CULTURAL MATERIAL

SOIL PROFILE

CULTURAL MATERIAL

yellowish brown
sandy loam

impenetrable level
of broken up
limestone

Negative

medium grayish brown
sandy humus

very mottled,
yellowish brown/
light brown/ reddish
brown sandy soil
with numerous, often
quite rounded pebbles
and cobbles of varied
types of material,
all apparently stream
deposit

Negative

100 CM.

100 CM.

TEST UNIT: 12:5, on fourth terrace,
30m E of 12:4 and separated
from it by gradual slope

SOIL PROFILE

CULTURAL MATERIAL

TEST UNIT: 12:6, 7 & 8, on fifth and highest
terrace, at 5m intervals and 5 m
in from slope to creek.

SOIL PROFILE

CULTURAL MATERIAL

similar to 12:4
but with somewhat
coarser and less
mottled sand

Negative

medium grayish brown
sandy humus

somewhat mottled,
yellowish brown/
light brown/reddish
brown sandy soil
with rock debris as
in 12:4

Negative

yellowish light
brown, somewhat
mottled sand

100 CM.

100 CM.

~~State Site #~~ New Richmond

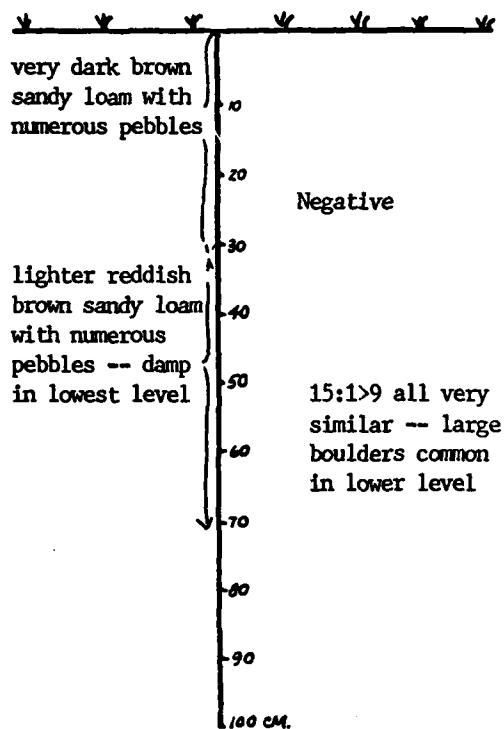
Paperjack Creek Flood Control Project

County St. Croix, WI

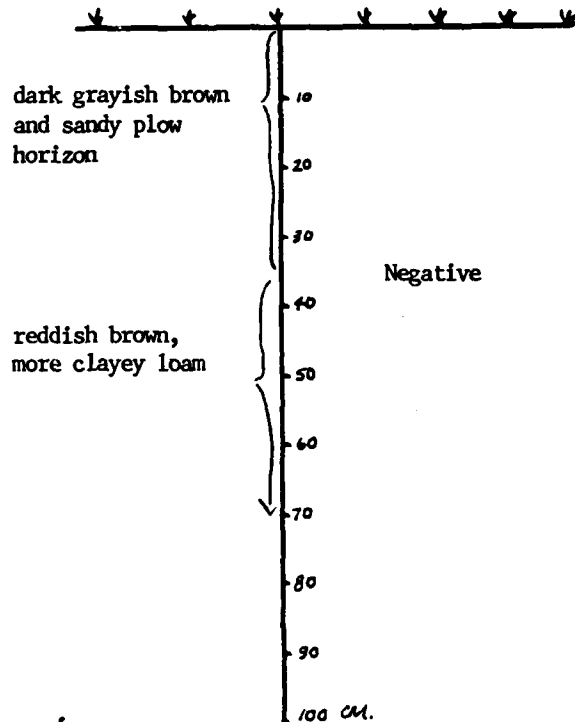
Crew C. Harrison

Date 5/17-18/85

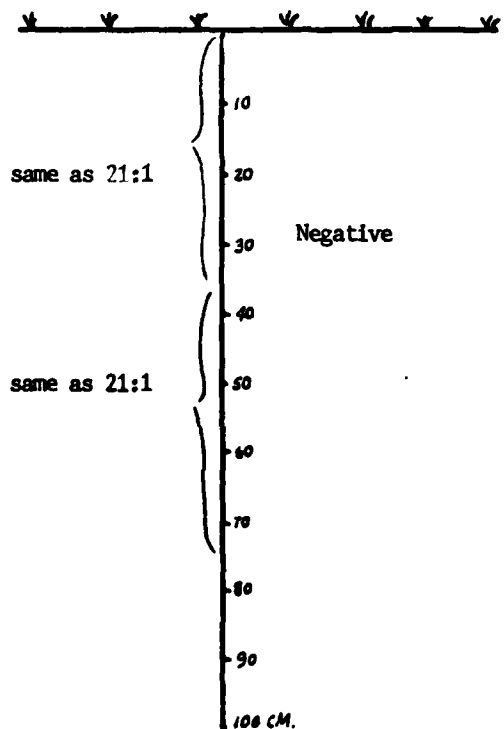
TEST UNIT: 15:1>9, at 15 m intervals, as on map
SOIL PROFILE CULTURAL MATERIAL



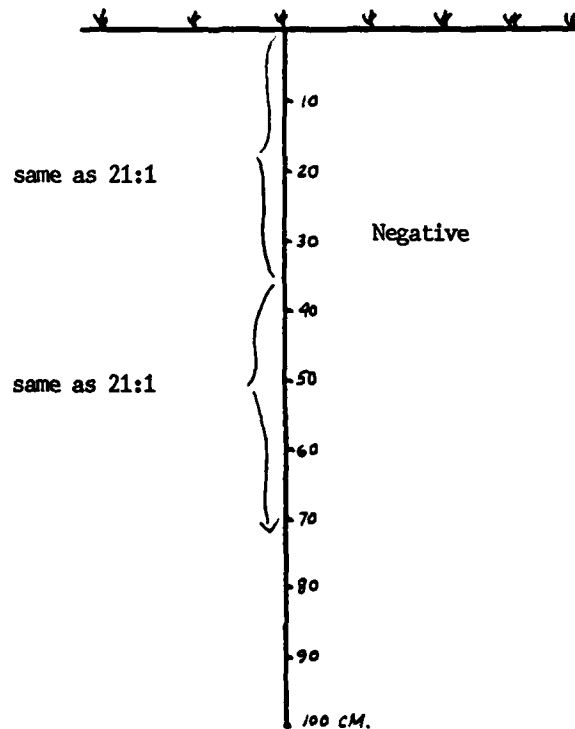
TEST UNIT: 21:1, 65m E of center of ravine and 5 m in from bank
SOIL PROFILE CULTURAL MATERIAL



TEST UNIT: 21:2 15m E of 21:1
SOIL PROFILE CULTURAL MATERIAL



TEST UNIT: 21:3 and 4, 15 and 30 m resp. E of (21:2)
SOIL PROFILE CULTURAL MATERIAL



Appendix C: Resume

VITA

Christina Inger Gotesdotter Harrison (Haglund)

Current: Director, Archaeological Research Services
2637 Humboldt Avenue South #3
Minneapolis, MN 55408
(612) 374-4571

Education:

1969 M. Phil. Degree
University of London, Institute of Archaeology
London, England

Research in England, Sweden, Finland and the USSR,
1966-1968, focused on the reconstruction of
prehistoric trade and other forms of culture contact
and, in particular, on the use of quantitative
chemical analysis of metal, ground stone, amber, and
wood artifacts for such reconstruction. Results
presented and discussed in a thesis titled:
Connections between Scandinavia, Russia and the
British Isles from the Late Neolithic to the Early
Iron Age.

1963- Internal M. Phil. Candidate, Institute of Archaeology,
1965 London, England.

Courses in: European, Asian and African Prehistory
(Professors J.D. Evans, R. Hodson, J. Sheldon,
T.S. Sulimirski, F. Zeuner); Physical Anthropology
and Paleontology (Professor I. Cornwall);
Environmental Archaeology and Pleistocene Geology
(Professors F. Zeuner, I. Cornwall and G.
Dimbleby); Archaeological Field and Conservation
Technique (Professors H. Hodges and I. Gedye);
Prehistoric Technology (Professor H. Hodges);
Archaeological Draughtsmanship and Cartography;
Cultural Anthropology (Professor P. Ucko).

1961 Cand. Phil. Degree
University of Upsala, Sweden (attended 1958-61)
Majors: German Language and Literature (Honors),
History and Theory of Art
Minors: European Prehistory (Honors), Cultural
Anthropology (Honors)

Scholarships and Grants:

- 1967 University of London Central Research Fund Travel Grant (for research carried out in the USSR)
- 1964- British Council Overseas Scholarship
1965
- 1958 Norstedt's Literary Prize (Sweden)

Teaching Positions:

- 1977- Taught in the Minnesota Archaeological Society
1979 (MAS) and Council of Minnesota Archaeology (CMA) Certification Program in Archaeology through the Extension Division at Hamline University, St. Paul, Minnesota. Courses: Archaeological Laboratory Techniques, Archaeological Survey Methods and Archaeological Field Methods.
- 1977 Assistant Professor, Anthropology, Extension Division, Mankato State University, Minnesota. Course: Archaeological Field Techniques--part of the same certification program shown above.
- 1976- Assistant Professor, Anthropology, Extension Division,
1977 University of Minnesota, Minneapolis, MN. Courses: North American Archaeology, Introduction to Prehistory, Principles of Social and Cultural Anthropology, Old World Prehistory.
- 1974- Instructor (part-time), Department of Sociology and
1976 Anthropology, St. Olaf College, Northfield, MN. Courses: The Emergence of Man, Cultural Anthropology, Native Americans Yesterday and Today, Directed Research.
- 1973- Directed two sessions of the Archaeological Summer
1974 Institute at Carleton College, Northfield, MN; each included 5 weeks of field school followed by 3 weeks of laboratory analysis and interpretation of excavated data and site features.
- 1971- Visiting Assistant Professor, Department of
1973 Anthropology, University of Minnesota, Minneapolis. Courses: Paleoanthropology, Old World Prehistory, Method and Theory in American Archaeology, Field Methods in Archaeology, Arctic Archaeology, Directed Studies
- 1970- Instructor, Department of Sociology and

- 1971 Anthropology, Carleton College, Northfield, MN.
Courses: Physical Anthropology, Archaeological Method
and Theory, Old and New World Prehistory, Cultural
Anthropology.

Archaeological Field Experience:

- 1984 Participated in a cultural resource survey of the
shores of the Pindari Dam Reservoir, NSW, Australia,
for the Water Resources Commission of NSW, April.

Directed intensive testing (for National Register
evaluation) of sites 21-AN-29 and 30, Rice Lake
Estates, Anoka Co., for the Zack Johnson Group, Maple
Grove, MN.

Directed further intensive testing (National Register
evaluation and mitigation respectively) on sites 21-
BE-44, Blue Earth Co., MN, and 21-SL-165, St. Louis
Co., MN, both for the Bureau of Land Management,
Eastern States Office.

Conducted a cultural resource reconnaissance survey of
proposed undertakings on Chippewa National Forest,
Beltrami, Cass and Itasca Co., MN, for the U.S. Forest
Service, during July-September.

Performed a cultural resource reconnaissance survey of
proposed developments within Sherburne National
Wildlife Refuge (NWR), Swan Lake Waterfowl Production
Area (WPA), Tamarac NWR and Maple Lake WPA (located in
Sherburne, Kandiyohi, Becker and Polk Co.,
respectively, MN). For the U.S. Fish and Wildlife
Service, during July and August.

Performed a cultural resource reconnaissance survey
along two transmission lines proposed for Wirt-
Alwood, Itasca Co., and Dickinson-Crow River, Wright
Co., MN for the United Power Association, Elk River,
MN, during October-November.

Also conducted Phase I cultural resource surveys for:

Anoka County Parks - proposed recreational lake
developments within Coon Rapids Dam Regional Park,
Coon Rapids, MN.

City of Lindstrom, Chisago Co., MN, proposed
developments within Beach Park.

City of Maple Grove, Hennepin Co., MN, proposed developments within Elm Creek Special Use Park.

City of Chanhassen, Hennepin Co., MN, proposed boat access within Lake Ann Park.

City of Grand Meadow, Mower Co., MN, proposed wastewater treatment plant expansion.

Land Development Group, Inc., Burnsville, MN, proposed housing development (Creek Ridge), in City of Savage, Scott Co., MN.

Render Development, Inc., Bloomington, MN, proposed Deer Run housing development, City of Savage, Scott Co., MN.

City of Madelia, Watonwan Co., MN, Watonwan River stabilization project.

Wright Co., MN, proposed developments within Beebe Lake Regional Park.

1983 Directed a reconnaissance survey and subsequent intensive testing on that part of 21-AN-24 which falls within the "Woods of Golden Lake" development area, Circle Pines, Anoka Co., MN; field work performed at various times during March-April, 1983. Final reports were submitted on April 6 and June 15, 1983 to James Lund Construction, Inc., Anoka, MN.

Directed a perimeter survey of archaeological site 21-BE-44, Blue Earth County, MN, for the Bureau of Land Management, Eastern States Office. Field work performed during May-June. More intensive testing (for National Register evaluation and mitigation of acute erosion problems) was performed during September-October.

Performed a Class III field inventory survey of select public domain tracts in Minnesota (Koochiching, Pine and St. Louis Counties) for the Bureau of Land Management (Eastern States Office) during May-June. Subsequently performed intensive testing of site 21-SL-065 (located during the Class III survey) for the purpose of National Register evaluation.

Performed two intensive archaeological field surveys for U.S. Fish and Wildlife Service: one within the Boot Lake Waterfowl Production Area (WPA) Jackson County, MN, the other within the Tatley Lake WPA, Clay County, MN, (July and November, respectively).

Directed Phase I cultural resource reconnaissance surveys for:

City of Eagle Lake, Blue Earth Co., MN, of proposed wastewater transporting facility.

City of Ceylon, Martin Co., MN, proposed wastewater treatment facility.

City of Lindstrom, Chisago Co., MN, same as the above.

Washington Co. Planning Department, MN, series of proposed collector drainfields.

Rock County Highway Department, MN, proposed extension of existing landfill.

Village of N. Hudson, St. Croix Co., WI, proposed developments within Ferry Landing Park.

1982 Directed a cultural resource survey of proposed undertakings on the Chippewa National Forest, MN, during September-November, 1982.

Directed a Phase II cultural resource investigation of Middle-Late Woodland deposits within County Lakes Park, City of Lino Lakes, Anoka Co., MN, May-June, 1982.

Performed Phase I cultural resource surveys for:

City of Carver, Carver Co., MN, proposed wastewater treatment facility.

City of Menasha, Wadena Co., MN, proposed wastewater treatment facility.

City of Lynd, Lyon Co., MN, proposed wastewater treatment facility.

City of Emmons, Freeborn Co., MN, proposed wastewater treatment facility.

City of Maple Grove, Hennepin Co., MN, housing development.

Meadow Lakes Corporation, Maple Grove, Hennepin Co., MN, housing development.

- 1981 Participated in a cultural resource survey of the Kerrabee Dam Project, NSW, Australia, for the Water Resources Commission of NSW, during March and April.
- Performed a cultural resource reconnaissance survey on the sites of the "Creek Bend Condominiums" and "Donnay's Creek View Hills - 2nd addition" developments, Hennepin Co., for Suburban Engineering, Inc., Minneapolis, August 1981.
- Directed a cultural resource survey of proposed undertakings on the Chippewa National Forest, MN, during September-November 1981.
- 1980 Participated in cultural resources survey of area of proposed open cut mining, for Ulan Coal Mines Limited, NSW, Australia, during March 1980.
- Performed Phase I cultural resource surveys for/in/of:
- Nicollet County, MN, proposed developments within Seven Mile Creek Park.
 - Rochester Park and Recreation Department, Olmsted Co., MN, proposed development, within Zumbro and Essex Parks.
 - Grant Co., MN, proposed developments within Lightning Lake Park.
 - Village of Stoddard, Vernon Co., WI, proposed wastewater treatment facility.
 - City of Stewartville, Olmsted Co., MN, proposed wastewater treatment facility.
 - Minnesota Department of Natural Resources, Section of Hay Creek Channel, Featherstone Twp., Goodhue Co., MN, proposed for habitat improvements.
 - City of Alpha, Martin Co., MN, proposed wastewater treatment facility.
 - Northfield Industrial Park Associates, Inc., Northfield, Rice Co., MN, proposed Commercial/Light Industrial Corridor.

Minnesota Department of Natural Resources, proposed boat launching/car parking facility in Hok-Si-La Municipal Park, Goodhue Co., MN.

City of Millerville, Douglas Co., MN, proposed wastewater treatment facility.

Directed a cultural resource survey of proposed undertakings on the Superior National Forest, MN, for the Forest Service, during August-October, 1980.

- 1979 Performed a series of small scale cultural resource inventory and impact assessment surveys for the following:

Arrowhead Electric Cooperative, Inc., Lutsan, MN, proposed powerline ROW;
Drummond State Bank, Barnes, Bayfield Co., WI, proposed new facility;
City of Maple Grove, Hennepin Co., MN, proposed developments within Weaver Lake community park;
City of Northfield, Rice Co., MN, proposed developments within Sechler Park;
Village of Colfax, Dunn County, WI, proposed wastewater treatment facility.

Directed a cultural resources survey of proposed undertakings on the Superior National Forest in Cook, Lake and St. Louis counties, MN, for the USDA-Forest Service during August-November, 1979.

- 1978 Directed the "Minnesota Historical Society Statewide Survey: Dakota-Goodhue Counties," April-June, 1978.

Directed a cultural resource survey within parts of the Agassiz and Tamarac National Wildlife Refuges, MN, for the USDI-Fish and Wildlife Service, May, 1978.

Directed a cultural resources survey of the Superior National Forest in Cook, Lake and St. Louis Counties, MN, for the USDA-Forest Service, July-August, 1978.

Directed further test excavation of a site in the Tamarac National Wildlife Refuge, in order to assess the cultural significance of the site as a guide to future management; performed during November 1978 for the U.S. Fish and Wildlife Service.

Directed the "Minnesota Historical Society Statewide Survey: Kanabec-Pine Counties," September-November, 1978.

- 1978 Performed a cultural resources survey and test excavation at Circle Pines, Anoka Co., MN, for Golden Lake Partnership, Inc., May 1977.
- Directed excavations at the Silvernale Site (21 GD 3), run as a fieldschool for the CMA-MAS Certification Program in Archaeology, June-July, 1977.
- Directed the "Minnesota Historical Society Statewide Survey: Anoka-Isanti Counties," September-December, 1977.
- 1976 Directed excavation at the Silvernale Site (21 GD 3), in Goodhue Co., MN, during April-July 1976 - a project carried out in cooperation with members of the Council for Minnesota Archaeology and the Minnesota Archaeological Society.
- Participated as Field Director in the cultural resource inventory survey of the shoreline of Lake Winnibigoshish, Itasca and Cass Counties, MN, for the U.S. Army Corps of Engineers, July-September, 1976. Principal Investigator: Dr. Eldon Johnson, University of Minnesota, Minneapolis.
- Performed a cultural resource inventory survey in the Chippewa National Forest, Itasca Co., MN, for the USDA-Forest Service, October-November 1976.
- 1975 Performed a cultural resource survey of the Control Data Recreational Area, St. Croix River, for the Control Data Corporation, November 1975.
- Performed a cultural resource survey at the Nett Lake Indian Reservation, St. Louis Co., for the Nett Lake Indian Reservation, during November 1975.
- Performed a cultural resource survey of the Boman Marina Project, Koochiching Co., for the U.S. Army Corps of Engineers, November 1975.
- 1974 Participated in a cultural resource survey along the proposed corridor of a transcontinental pipeline during the month of March in NSW, Australia. Director: Dr. L. Calley, National Parks and Wildlife Service of NSW.
- 1973-1974 Submitted a proposal for an Archaeological Summer Institute at Carleton College, Northfield, MN, during Fall 1972. Directed the first two sessions of this program during July and August of 1973 and 1974, which involved excavation and survey in Rice and Goodhue Co., MN, followed by laboratory analysis, curating, and interpretation of the data.

- 1972 Directed the University of Minnesota Archaeological Field School at Rice Lake State Park, MN, June-July 1972.
- 1968 Participated as an Assistant Field Director in the excavation of an aboriginal burial ground at Broadbeach, Queensland, Australia, during August-September, 1968. Director: Dr. L. Haglund, University of Queensland.
- 1966- Carried out museum and library research in England,
1967 Sweden, Finland and the USSR.
- 1962- Worked as Assistant Field Director for Riksantikvarie-
1963 ambetet (Ministry of Antiquities), Sweden, in the excavations at Overuman, Swedish Lapland, during July-September, 1962 and July-September, 1963.
- 1961 Participated in excavations at the Bronze Age Cemetery of Dragby, Upsala, Sweden, during May-June, 1961. Director: Professor Marten Stenberger, University of Upsala, Sweden.
- 1960- Participated in excavations at the Neolithic and
1961 Bronze Age Site in Gwithian, Cornwall, England, during the summers of 1960 and 1961. Director: Professor Charles A. Thomas, University of Edinburgh.

Other Professional Experience:

- 1970- Guest lectured on aspects of Midwestern or Old World
1983 Prehistory to a variety of academic, layman and public school audiences (a partial listing would include Carleton College, Northfield, MN, Hamline University, St. Paul, Mankato State University, University of Minnesota, American Institute of Archaeology, Rockford, IL chapter, Minnesota Archaeological Society, Twin Cities Chapter, as well as various county historical societies and public schools around Minnesota).
- 1977 Designed and assembled an exhibit on "Daily Life at the Mississippian Sites of the Red Wing Area" for Goodhue County Historical Society, Red Wing, MN.
- 1973 Designed and assembled an exhibit on "The Prehistory of the Cannon River Valley," for Carleton College, Northfield, MN.
- 1965- Drafted maps and illustrations of artifacts for
1966 various archaeological reports.

- 1964 Translated archaeological literature from German into English for Thames and Hudson: London (see further under Publications and Reports).

Publications and Reports (brief survey reports excluded):

- 1985 A Cultural Resource Survey of Proposed Undertakings on Chippewa National Forest, Beltrami, Cass and Itasca Counties, Minnesota. Submitted to the U.S. Forest Service during March, 1985. Under preparation for publication: Final reports on two excavations conducted for the Bureau of Land Management, Eastern States Office, at 21-BE-44, Blue Earth County, MN and at 21-SL-165, St. Louis County, MN.

- 1984 Report on an Archaeological Intensive Field Survey of Tract 106, Parcel A, Tatley Lake Waterfowl Production Area, Clay County, Minnesota. Performed on November 2-4, 1983. Submitted to U.S. Fish and Wildlife Service 1/6/84.

Report on Intensive Testing of Prehistoric Sites 21-AN-23 and 21-AN-30, Located Within Proposed Rice Lake Estates Development, Lino Lakes, Anoka County, Performed During May, 1984. Submitted to the Zack Johnson Group, Architects and Planners, Maple Grove, MN on 6/4/1984.

Report on a Cultural Resources Reconnaissance Survey Along the Right-of-Way of the Proposed United Power Association Transmission Line Between Alvwood and Wirt, Itasca County, MN. Performed October 23-26, 1984. Submitted to the United Power Association, Elk River, MN, 11/16/84.

Report on Archaeological Surveys at Sherburne National Wildlife Refuge (Sherburne County), Swan Lake Waterfowl Production Area (Kandiyohi County), Tamarac National Wildlife Refuge (Becker County) and Maple Lake Waterfowl Production Area (Polk County), MN. Performed during July-August, 1984. Submitted to U.S. Fish and Wildlife Service 11/25/84.

- 1983 Report on Intensive Archaeological Testing on that Part of 21 AN 24 which Lies within the Proposed "Woods of the Golden Lake" Development, Circle Pines, Anoka County, Minnesota, April-May, 1983, submitted June 15, 1983 to James Lund Construction Inc., Anoka, MN.
- Report on a Class III Intensive Field Inventory of Select Public Domain Tracts in the State of Minnesota Proposed for Public Sale in Fiscal Year 1984.
 Submitted to Bureau of Land Management, Eastern States Office, 7/14/83.
- Report on a Sample Archaeological Intensive Field Survey of Boot Lake Waterfowl Production Area, Litchfield Wetland Management District, Jackson Co., MN, performed on July 8-9 and August 8-10, 1983.
 Submitted to U.S. Fish and Wildlife Service 8/19/83.
- 1982 An Archaeological Phase II Investigation Within the Country Lakes Park, City of Lino Lakes, MN, May-June, 1982, submitted to the City of Lino Lakes on June 27, 1982.
- A Cultural Resource Survey of Proposed Undertakings on Chippewa National Forest, Beltrami, Cass and Itasca Counties, MN, submitted to the U.S. Forest Service during May, 1982.
- 1981 A Cultural Resource Survey of Proposed Undertakings on the Superior National Forest, Lake, Cook, and St. Louis Counties, MN, submitted to the U.S. Forest Service, February 1981.
- 1980 A Cultural Resource Survey of Proposed Undertakings on the Superior National Forest, Lake, Cook, and St. Louis Counties, MN, submitted to the U.S. Forest Service, January 1980.
- 1979 The Prehistory of Kanabec and Southern Pine Counties: An Archaeological Survey of the Snake River Region.
 St. Paul: Minnesota Historical Society.
- The Prehistory of Dakota and Goodhue Counties: An Archaeological Survey of the Cannon River Region. St. Paul: Minnesota Historical Society.
- The Prehistory of Anoka and Isanti Counties: An Archaeological Survey of the Anoka Sandplain. St. Paul: Minnesota Historical Society.

- 1978 Section on the Mississippian Cultural Tradition in Red Wing, Minnesota, Saga of a River Town, by M. Angell; Red Wing: Goodhue County Historical Society.

Report on the Test Excavations Carried out on the Blackbird Trail #2 Site, 21 BK 28, During October-November, 1978; submitted to the U.S. Fish and Wildlife Service, Twin Cities, MN.

A Cultural Resources Survey of the Superior National Forest, Cook, Lake and St. Louis Co., MN.

Report on the Archaeological Survey Carried Out in the Agassiz and Tamarac National Wildlife Refuges, Minnesota, on May 5-9, 1978; submitted to U.S. Fish and Wildlife Service, Twin Cities, MN.

- 1977 Sections of Cultural Resources Inventory of Lands Adjacent to Lake Winnibigoshish; submitted to the U.S. Army Corps of Engineers, St. Paul District.

Report on the Archaeological Survey Carried out in the Chippewa National Forest, Compartments #84 and 85, during October-November, 1976. Submitted to the U.S. Forest Service, Cass Lake, MN.

- 1969 Connections Between Scandinavia, Russia and the British Isles; M. Phil. Thesis, University of London, England.

- 1964 Translation of The Art of Mesopotamia, from the German original Mesopotamia by Eva Strommenger, (300 pp.) for Thames and Hudson: London, England.

Publications in preparation:

The Silvernale Site: A Mississippian Village at the Cannon Junction

The Redepenning Collection: A Study of the Prehistory of the Cloquet River Basin, Minnesota

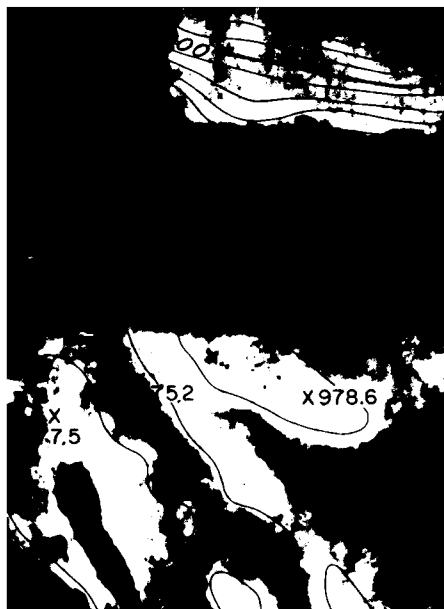
Professional Organizations:

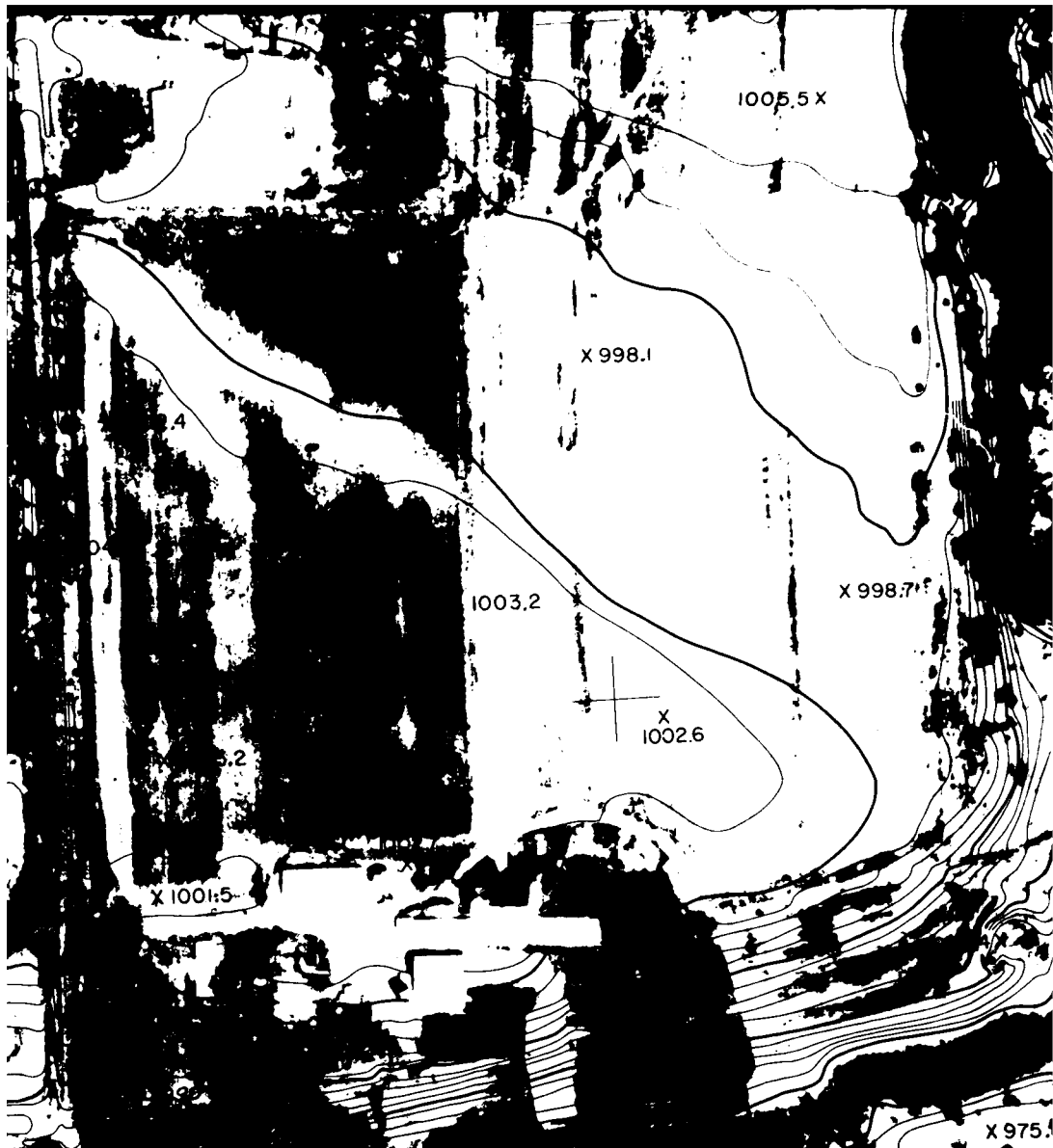
Society for American Archaeology
Council for Minnesota Archaeology
Minnesota Archaeological Society
Manitoba Archaeological Society
Ontario Archaeological Society

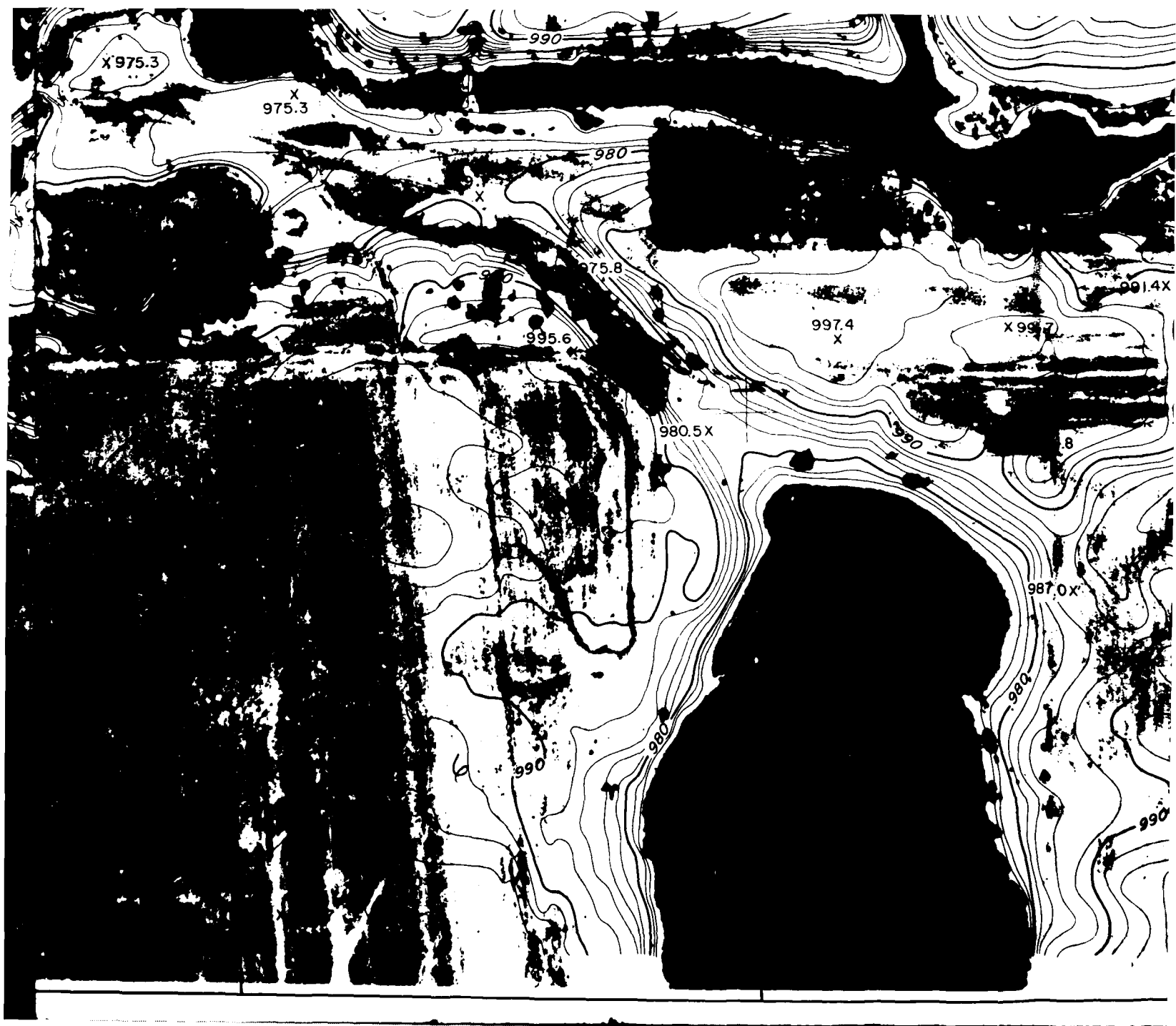








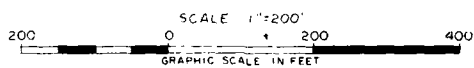








ORTHO/CONTOUR MAP



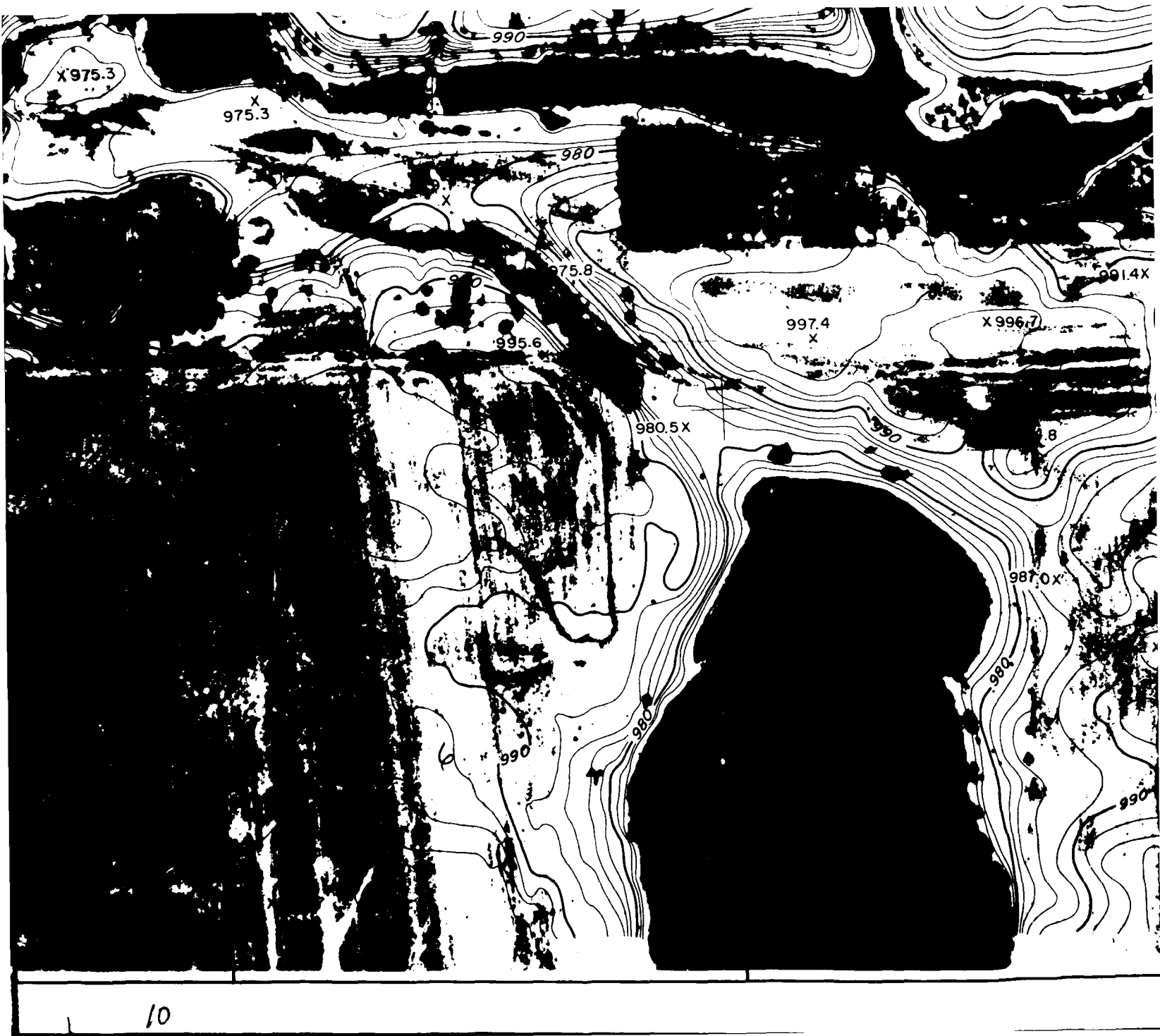
TOPOGRAPHY BY PHOTOGRAMMETRIC TECHNIQUES FROM AERIAL
PHOTOGRAPHY DATED APRIL 25, 1983
HORIZONTAL DATUM MINNESOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE
VERTICAL DATUM MEAN SEA LEVEL 1929
CONTOUR INTERVAL 2'

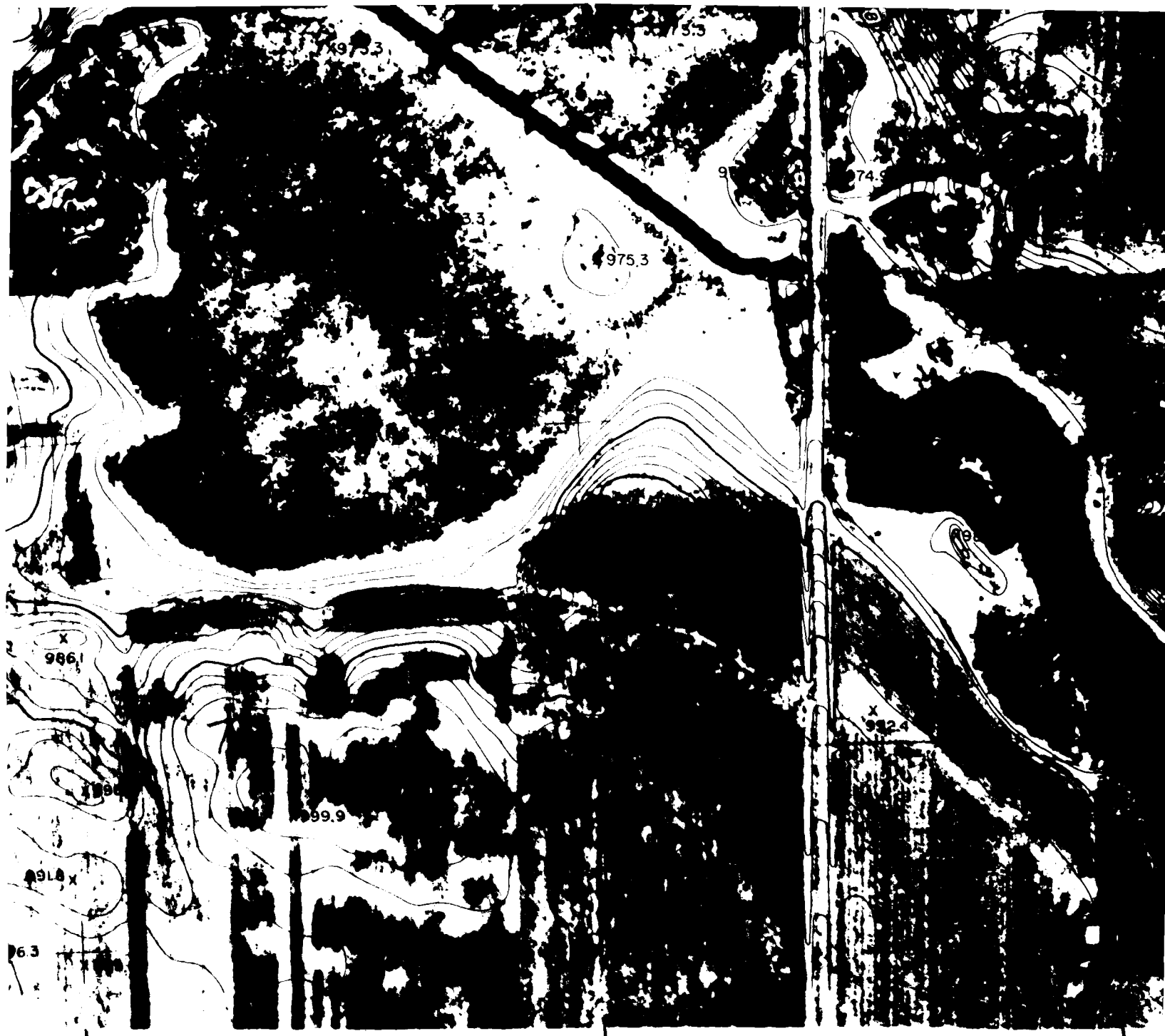
PHOTOIMAGERY TRANSFORMED BY SCANNING TECHNIQUES
WHICH MAY PRODUCE DOUBLE OR MISMATCHED IMAGES;
USE THE MEAN OF IMAGE POSITIONS FOR MAP POINT.

CONTOURS IN WOODED AREAS MAY NOT MEET NATIONAL
MAP ACCURACY STANDARDS AND SHOULD NOT BE
USED FOR DESIGN PURPOSES

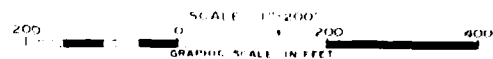
SYMBOL		DESCRIPTION		DATE	APPROVAL
DESIGNED BY:		DEPARTMENT OF THE ARMY ST PAUL DISTRICT CORPS OF ENGINEERS ST PAUL, MINNESOTA			
DRAWN BY:					
CHECKED BY:					
SUBMITTED BY:					
APPROVED:		DATE:			
CHIEF ENGINEER Division		SCALE		SHEET NO.	
DRAWING NUMBER					







ORTHO/CONTOUR MAP



TOPOGRAPHY BY PHOTOGRAMMETRIC TECHNIQUES FROM AERIAL PHOTOGRAPHY DATED APRIL 25, 1983
 HORIZONTAL DATUM MINNESOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE
 VERTICAL DATUM MEAN SEA LEVEL 1929
 CONTOUR INTERVAL 2'

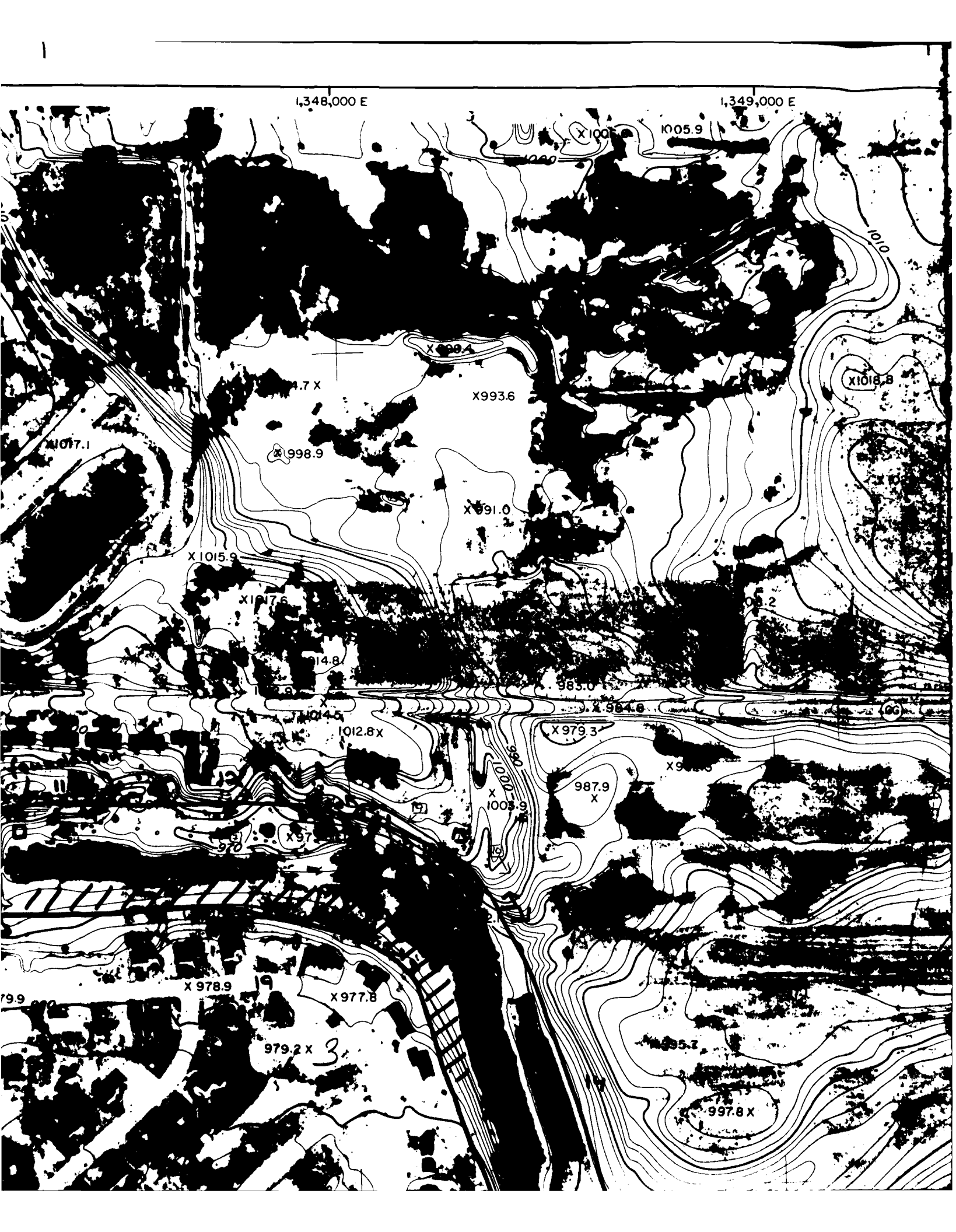
PHOTOIMAGERY TRANSFORMED BY SCANNING TECHNIQUES WHICH MAY PRODUCE DOUBLE OR MISMATCHED IMAGES; USE THE MEAN OF IMAGE POSITIONS FOR MAP POINT.

CONTOURS IN WOODED AREAS MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS AND SHOULD NOT BE USED FOR DESIGN PURPOSES

SYMBOL		DESCRIPTION		DATE	APPROVAL
DEPARTMENT OF THE ARMY ST. PAUL DISTRICT CORPS OF ENGINEERS ST. PAUL, MINNESOTA					
DESIGNED BY:					
DRAWN BY:					
CHECKED BY:					
SUBMITTED BY:					
APPROVED:		DATE:			
COMP. ENG. DIVISION		SCALE:	SHEET NO.		
		DRAWING NUMBER			
		SHEET 1 OF 7			







1,348,000 E

1,349,000 E

X1005.4

1005.9

X999.4

994.7 X

X993.6

X1018.8

X1017.1

X998.9

X991.0

X1015.9

X1017.6

1014.8

X1014.5

1012.8 X

985.0

X984.8

X979.3

987.9

X

X988.3

X1000.9

X977.4

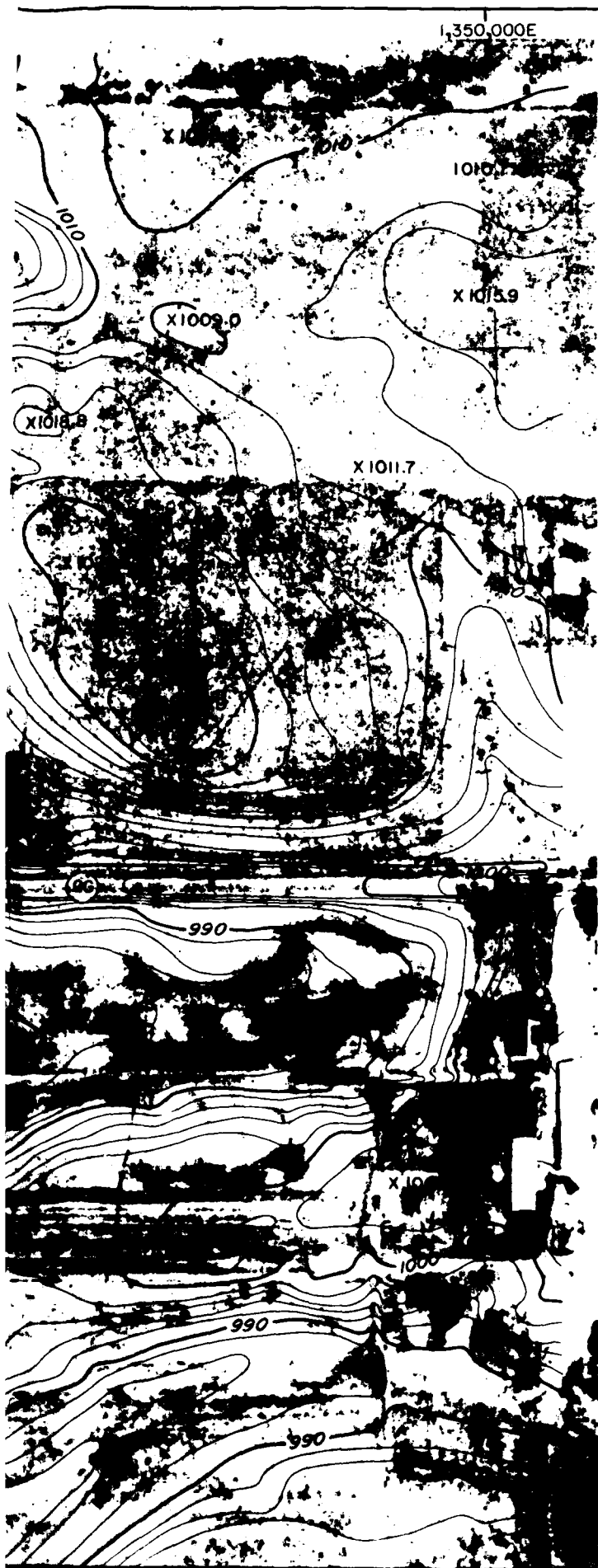
X978.9

X977.8

979.2 X

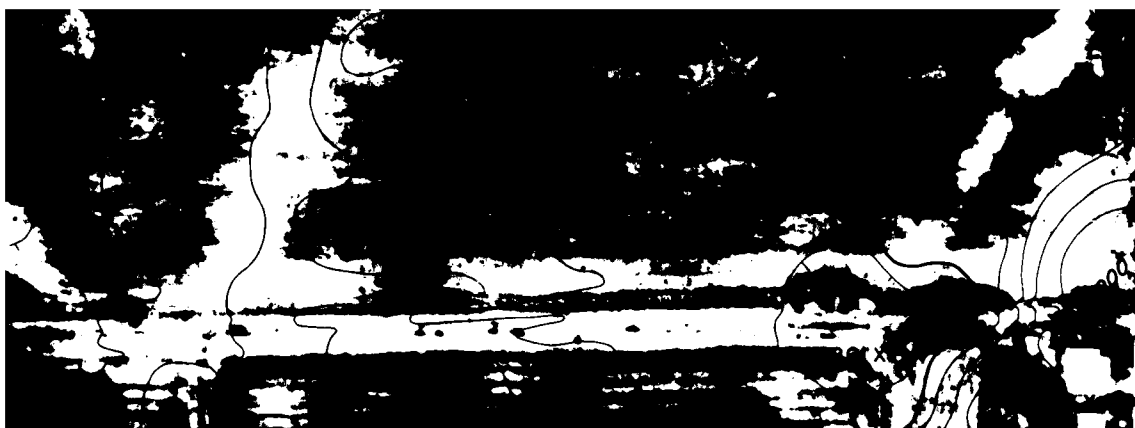
985.7

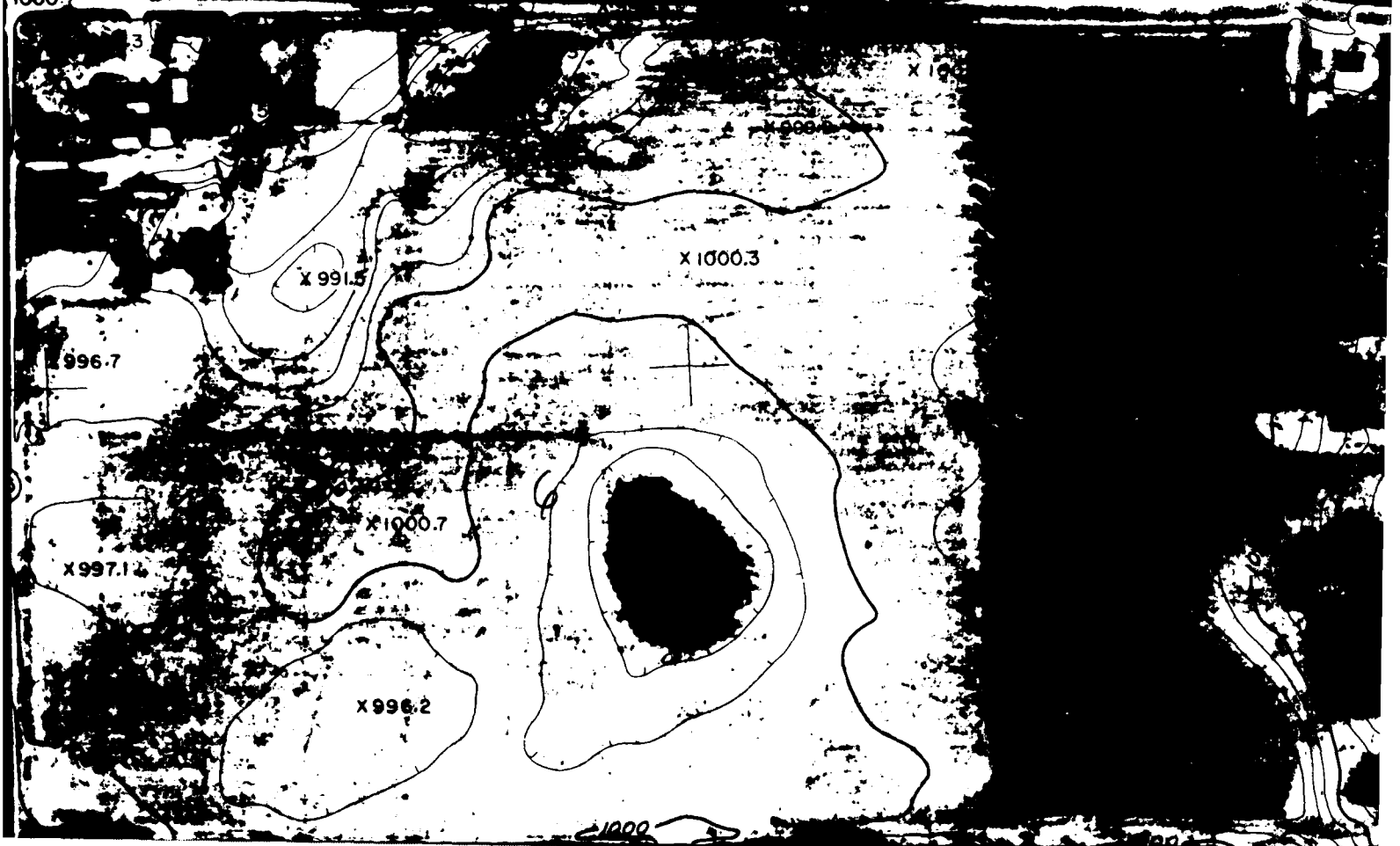
997.8 X

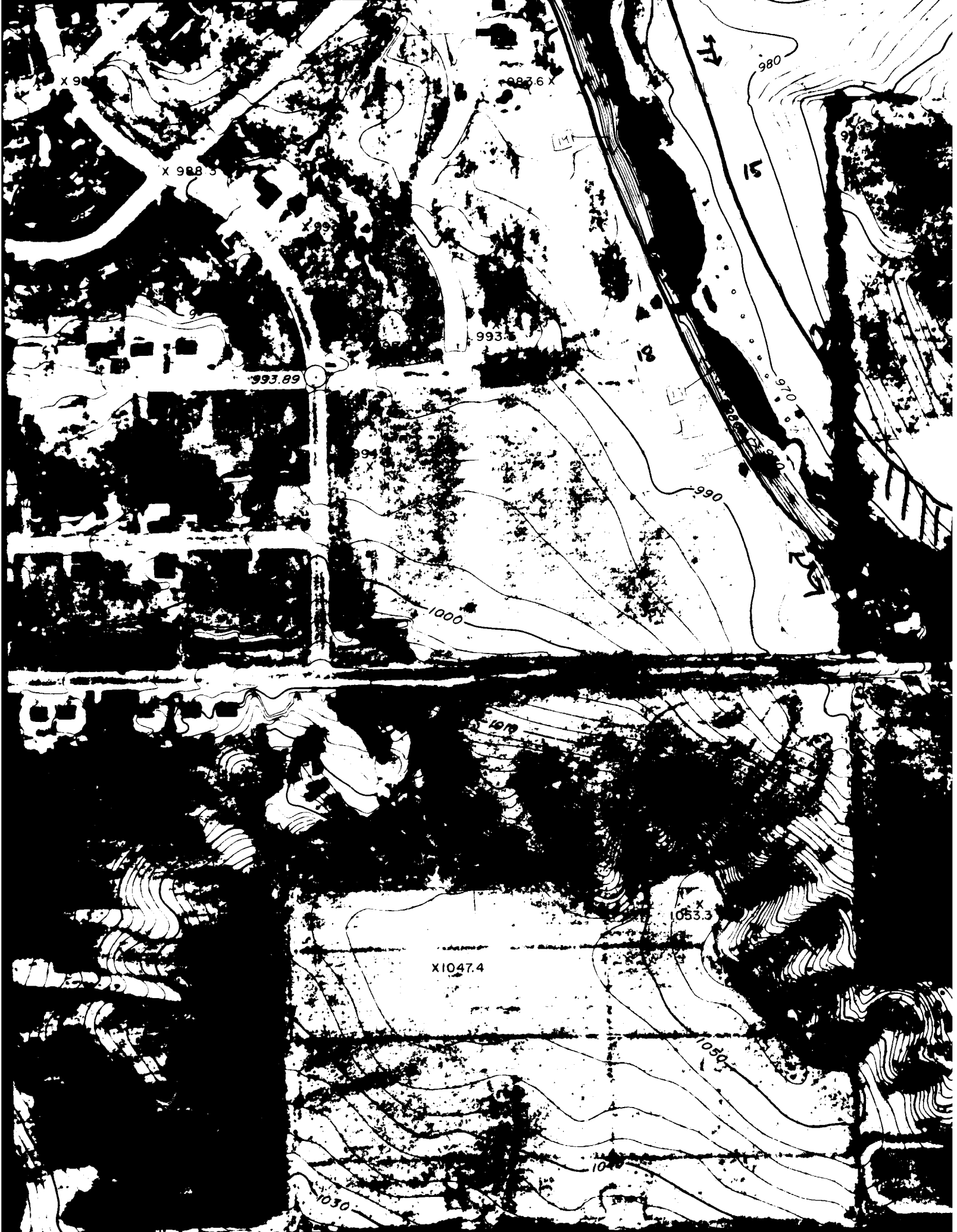


- 4 • shovel test
- ✱ sopher disturbance
- ⑥→ location / direction of photograph
- ||||| deeply disturbed soil

Figure 5.

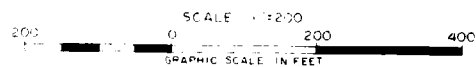








ORTHO/CONTOUR MAP



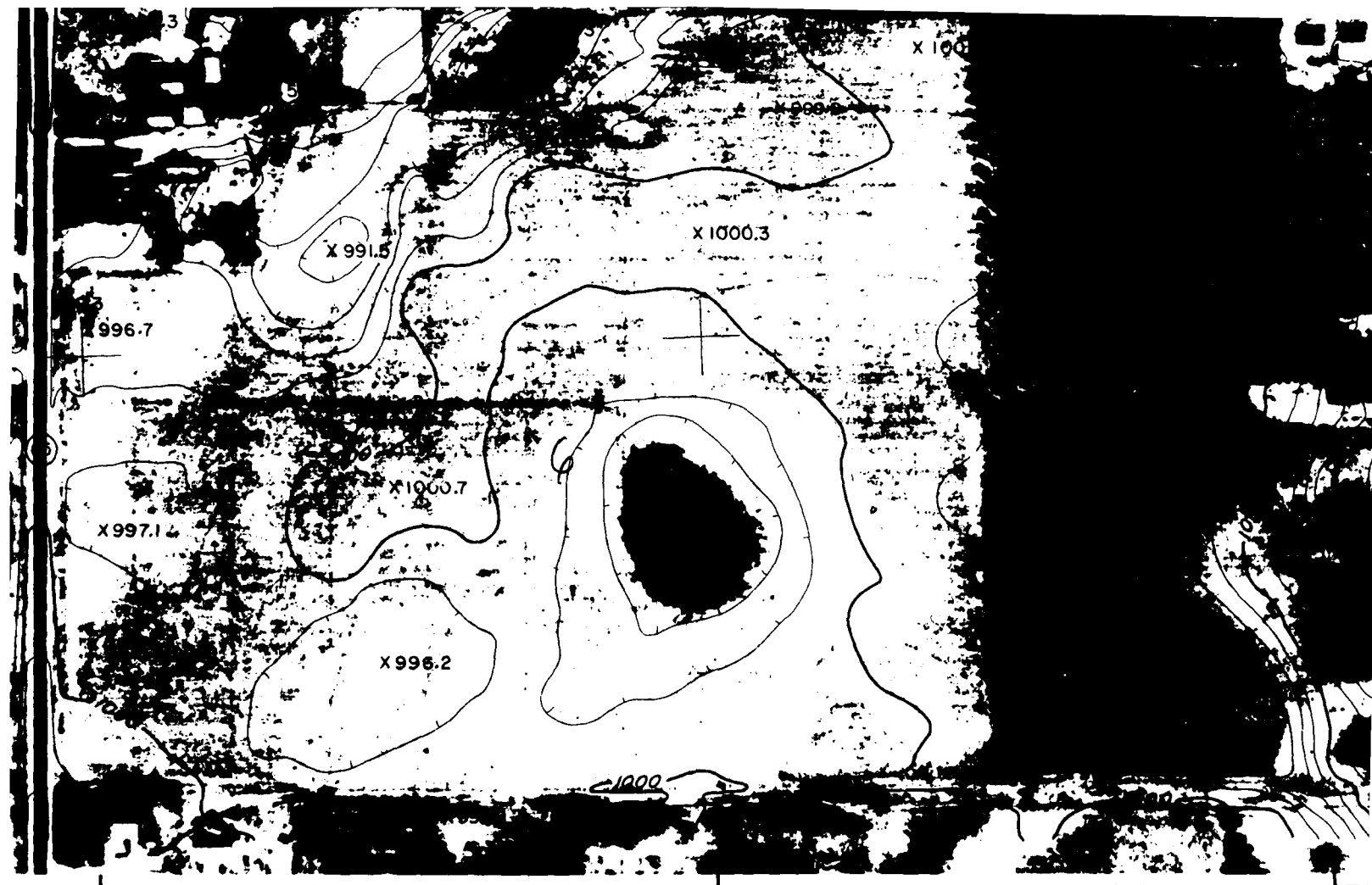
TOPOGRAPHY BY PHOTOGRAMMETRIC TECHNIQUES FROM AERIAL
PHOTOGRAPHY DATED APRIL 25, 1983
HORIZONTAL DATUM MINNESOTA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE
VERTICAL DATUM MEAN SEA LEVEL 1929
CONTOUR INTERVAL 2'

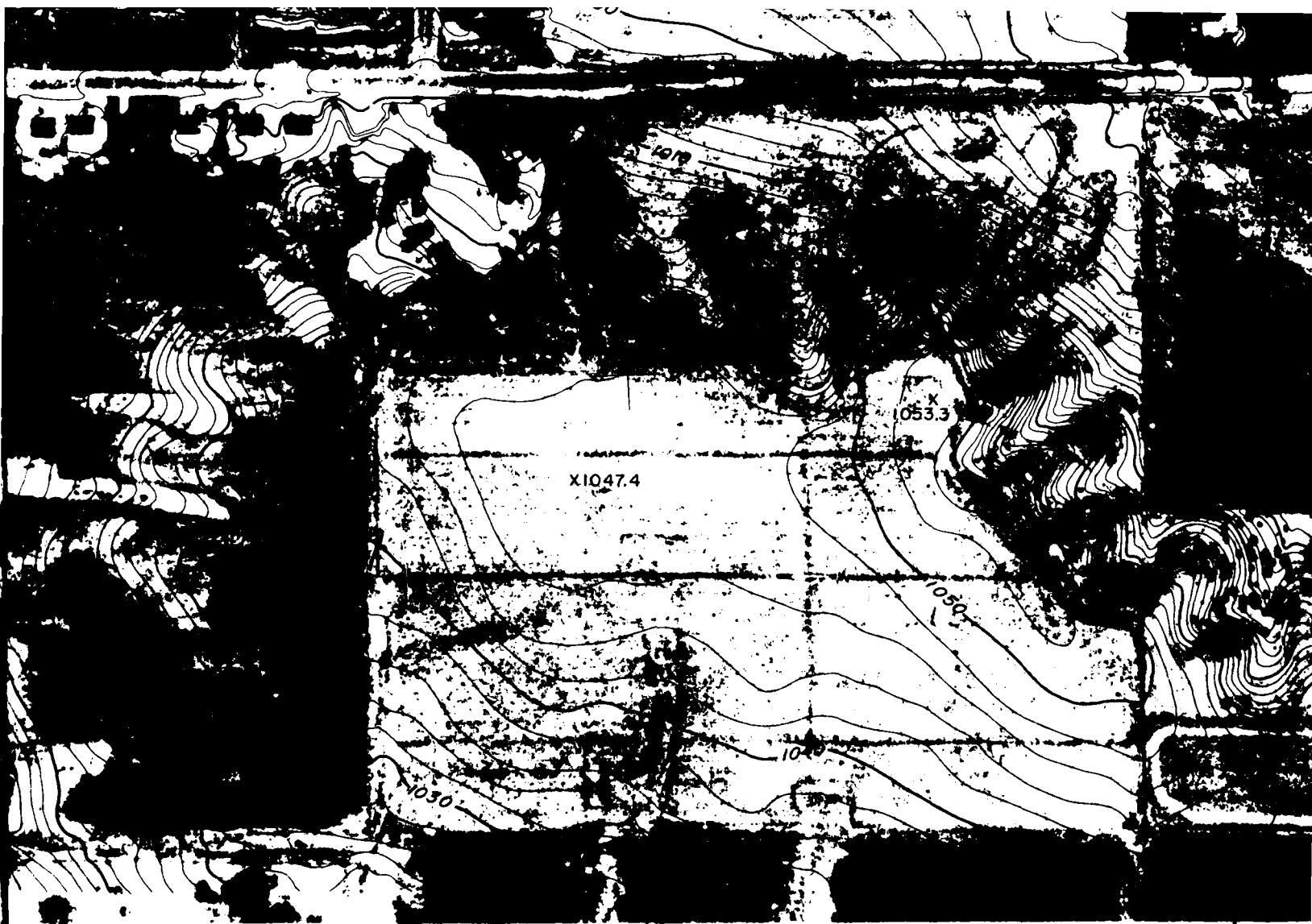
PHOTOIMAGERY TRANSFORMED BY SCANNING TECHNIQUES
WHICH MAY PRODUCE DOUBLE OR MISMATCHED IMAGES;
USE THE MEAN OF IMAGE POSITIONS FOR MAP POINT.

8
CONTOURS IN WOODED AREAS MAY NOT MEET NATIONAL
MAP ACCURACY STANDARDS AND SHOULD NOT BE
USED FOR DESIGN PURPOSES

SYMBOL		DESCRIPTION		DATE	APPROVAL
DESIGNED BY:		DEPARTMENT OF THE ARMY ST PAUL DISTRICT CORPS OF ENGINEERS ST PAUL, MINNESOTA			
DRAWN BY:					
CHECKED BY:					
SUBMITTED BY:					
DATE:		DATE:			







END

DATE
FILMED

10-86